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★ **GIOVANNI SPADOLINI**
Our Army, Reflection
of the Nation

★ **CIRO DI MARTINO**
Notes
on Terrorism

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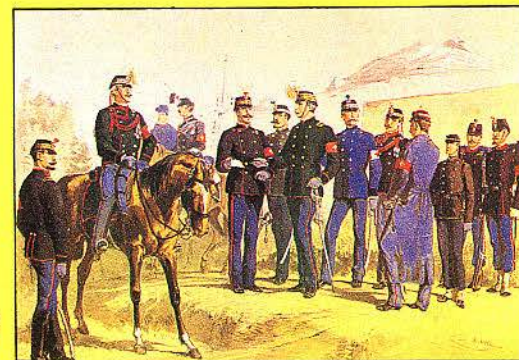
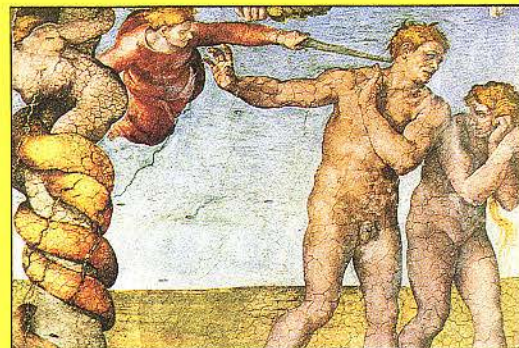
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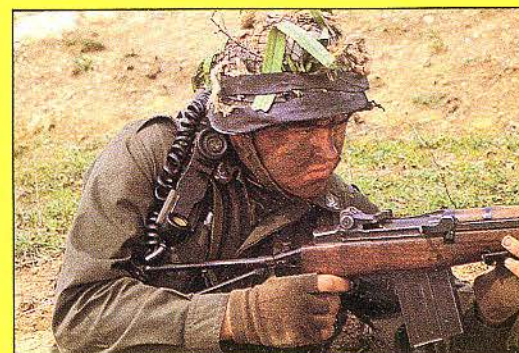
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THE DAY OF THE MARTYRS AND FALLEN FOR NATIONAL INDEPENDENCE

The Day of the Martyrs and Fallen for National Independence has been instituted as a means of remembering all those who have given their lives for our unity and independence. We are duty-bound to remember our heroes. No-one should forget their sacrifice, which has enabled us to become a nation that is respected in the world, free to decide its own destiny, and free to decide on its own form of government. Unity and independence are instinctive values in the history of nations, and neither force nor blandishments can stifle these instincts when a national has become aware of itself. Italy is a country that has known long years of division and oppression. The great legacy of her ancient civilization, the splendour of her monuments and works of art, and the wealth of her cities and towns have attracted the world's attention to her across the centuries. All the powerful men who have set foot on the European stage have set their sights on her, and Italy has been offended, humiliated and plundered, until the day that the ideals of freedom and independence inflamed the hearts of our patriots, who gave up their lives for Italy by the thousand, in prison, on the scaffold, and on the battlefield.

Left:

Giuseppe Garibaldi at the Battle of Calatafimi (15 May 1860). Detail of an oil painting by Remigio Legat, kept at the Museo del Risorgimento in Milan.

Above:

The Battle of Bezzecca (20-21 July 1866). Detail of an oil painting by Felice Zennaro, kept at the Museo del Risorgimento in Milan.



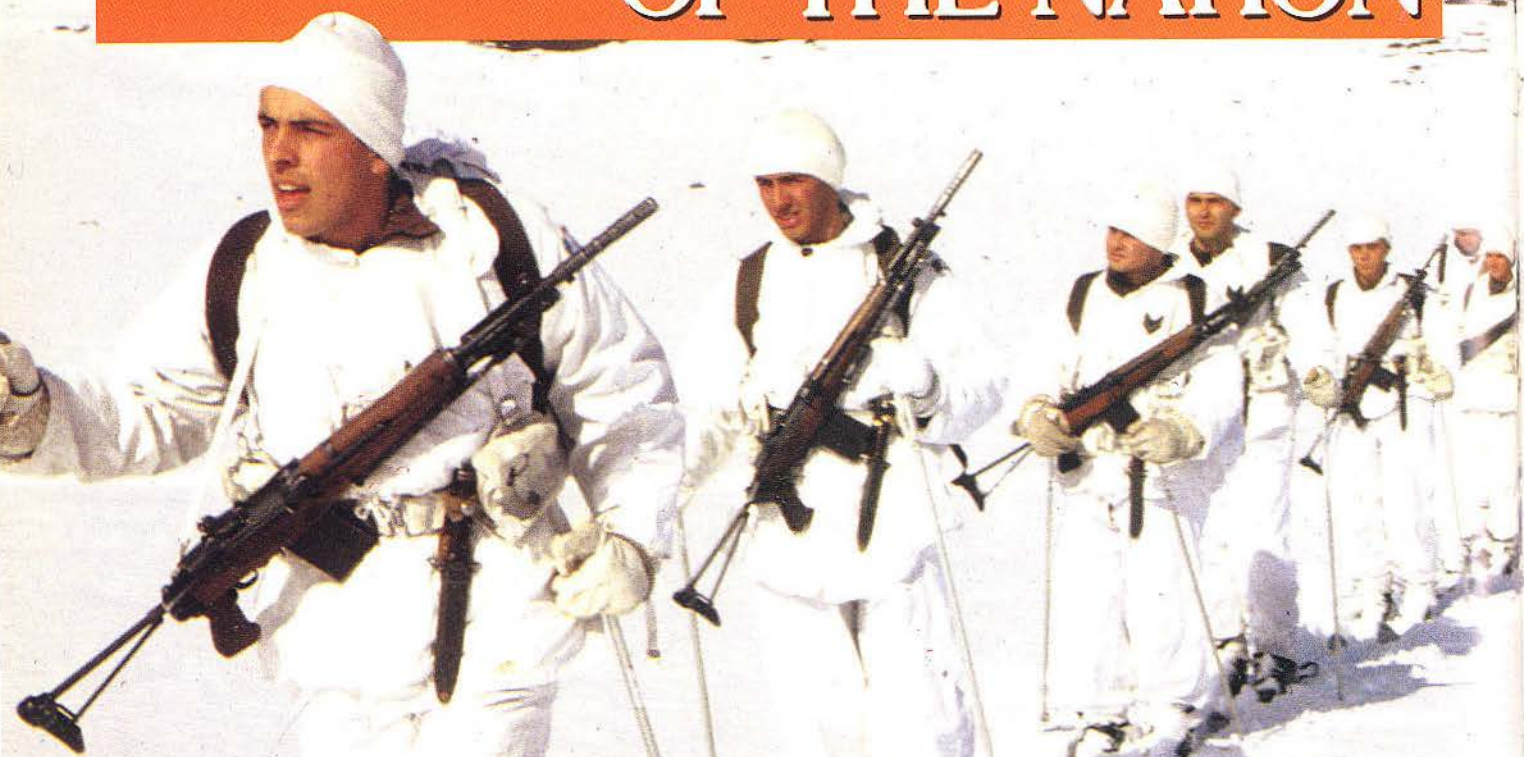
Our unity and our freedom has been paid for with blood, defended with blood, and reconquered with blood when it has been taken away from us. Our history has not been cowardly, as some would like to have us believe. It is a history which has its heroes, its fallen, its victories, in battles that Italy has fought against great powers and powerful armies.

Let us remember these heroes, who are all near us in the ideals that drove them on and still drive us on today. Ideals of freedom, progress and unity. We can say that the Italians have deserved their sacrifice. Italy has never been as united as she is today. At last we

speak the same language, and share the same customs, and harbour the same desires. Progress has become widespread, and has broken the historical shackles that used to split the north from the south, the east from the west, and it has now spread throughout nearly all the provinces and towns of Italy. Italy is a free and peaceful country, committed to raising production, increasing her wealth, and enhancing her culture. But this is also due to those good men who have gone before us: our martyrs and the fallen who have fought for us, harbouring in their hearts the twin ideal of peace and freedom.

Bettino Craxi

OUR ARMY, REFLECTION OF THE NATION



It is only too easy to take a moralistic stance on military matters, disapproving of this or that aspect. But, in Italy, the people's army, as our republican Constitution terms it, faithfully mirrors the population as a whole, including all our contradictions and shortcomings. It reflects a whole array of political attitudes, the vitality and the vices of the country. Some – Sig. Galli della Loggia, for example – have compared it with the armies of armed nations like Israel, where the entire country is involved in combat and a total sense of dedication is combined with a high degree of specialization. But ours can no more be compared with this sort of army than it can with the kind of German army envisaged by von Moltke.

At the same time, my specialist knowledge as a

historian of post-Risorgimento Italy prevents me from fully endorsing the often acritically accepted assumption that the army has always hovered between "rhetoric and promotion at all costs". Rather than by an undue interest in promotion, in the early decades of united Italy, the army may be said to have been dominated by the ruthless antagonism among the higher ranks and reciprocal antipathy among the various service branches, which often resulted in each having an overweening *esprit de corps*. This was, however, fairly typical of the armed forces throughout the whole of Europe during the 19th and early 20th centuries.

However, during our forty years of republican Constitution, the army has come a long way from its Risorgimento and post-Risorgimento origins. "An

expedition in the Lebanon and the popular appeal of General Angioni are not enough to convince the Italians that things have really changed", says Sig. Galli della Loggia; but let us look at the facts. The Lebanon task showed a very different army from the traditional image. It was the first expedition, regardless of the fact that it was on a rather limited scale, in which all the forces involved were fully integrated, a situation reflecting the new approach to the organization of the armed forces that has been in force for the last three years and is embodied in the 1985 White Paper.

Let us take the example of the military organization in Lebanon; on this occasion an army brigadier had the power to order the Italian ships anchored

in the port of Beirut to provide artillery support for the land contingent. The latter were equipped only with light weapons, an intelligent precaution which served to avoid the tremendous reprisals inflicted on our US and French allies. The whole operation showed perfect co-ordination between the air-lift, by means of which the Italian land forces (the largest western contingent, with all the logistic problems that this entailed) were supplied from the homeland for 18 months, and the other land and naval forces deployed in the area to guarantee stability and peace.

The Lebanon expedition represented Italy's most significant military task since the Liberation, and it could not have been so successful if it had not broken with the standoffish attitude and parochialism that had marked our armed forces prior to the fascist period.

Another significant factor is the internationalization that involvement in NATO has meant for officers belonging to Angioni's generation, a generation of fifty-year-olds whose training took place against a background of co-operation and shared experience. Such a wealth of contacts was quite unknown to our old national army, whose traditions had remained provincial and parochial, albeit linked to the glorious period of the Risorgimento.

It is undoubtedly true that our military structures are far from perfect. However, to blame all the accidents and suicides that take place in barracks on "poor and often degrading" conditions is, like all generalizations, unjustified and misleading.

Let us have a look at the figures. Of our roughly 500 barracks, 100 already existed in the last century and in general reflected the efforts made by the "historical" right wing (the Italian governments at the turn of the century) to secularize society, re-utilizing

buildings that had belonged to the church. Significantly enough, the expression "lay clergy" was used for the army in the years following Unification, when the spirit of De Amicis, erroneously supposed by some to be mere rhetoric, exercised enormous influence. Another 350 were built from 1900 to the end of the second world war and then, unfortunately, only 50 more from the Liberation until the present time.

The real structural problems have, for example, nothing to do with barracks like the "Baldassarre" at Maniago which I myself have had the opportunity to visit. It was built in 1962, and is among the most modern and spacious in Italy. The real problem is one of infrastructure, and a project to modernize and improve them has already been under study for some years. However, this will call for resources that are not, as yet, available to us.

To quote verbatim from the statement I made on television on 24th April 1985: "Plans for renewal are slowly going ahead. As for the number of suicides, figures for the barracks are comparable with the national average. There is, however, no doubt that they do occur; unfortunate incidents occasionally do take place, and there are frustrations and problems of adaptation which I have openly discussed. Above all, there is a sense of futility that must be reckoned with; many barracks fail to offer adequate training because they have no proper firing ranges or gymnasiums. Often the soldiers simply do not know what to do, and boredom becomes a real problem. It is up to the government to ensure twelve months of serious training, including physical training, but the lack of facilities is an age-old problem". We must also have the courage to introduce further changes; one such example is the reduction of conscription, which is already under way.

There are, of course, certain long-standing problems in the

barracks that have so far resisted the combined efforts made by the Ministry, Chiefs of Staff and local COs. One such example is the practice of "nonnismo" in which recruits are often subjected to humiliating experiences; the sort of crude bullying that freshmen used to have to undergo on entering university seems to linger on in some of our barracks.

Commenting on the suicides that occurred in barracks in the Friuli region, and which are being investigated by the civilian authorities who have been given a perfectly free hand (an investigation by the Parliamentary Defence Committee is also in progress), I once again made the policy of the military administration on this point quite clear.

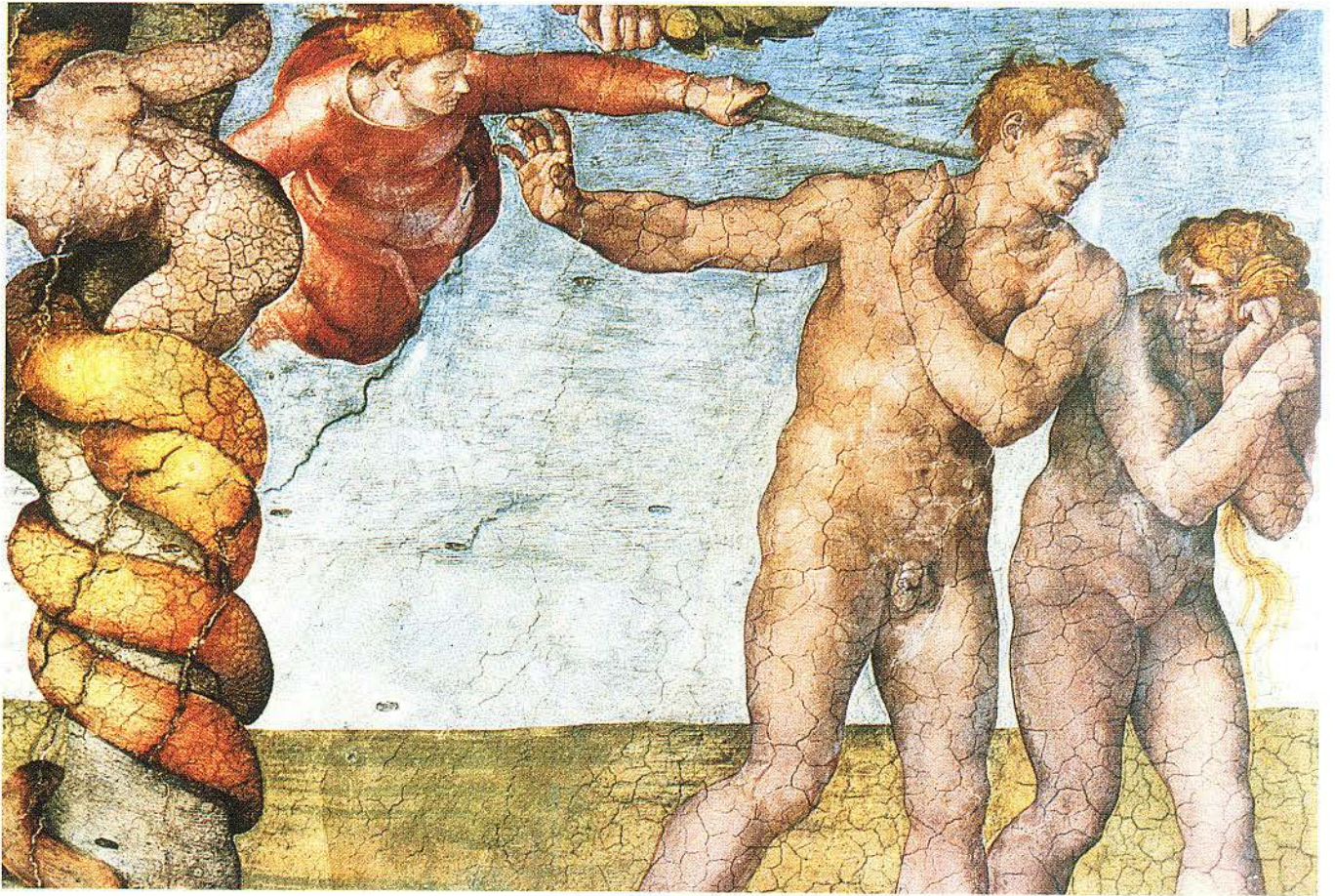
We shall all do our utmost to remedy the ills of our country, also those in the military sector. At the same time, I should like to refute some generalizations that have been made in this respect. In the small proportion of its budget spent on defence, among the NATO nations, Italy can only be compared only with such countries as Portugal and Luxembourg, and the military structures inevitably reflect the state of the nation as a whole.

There are faults to be corrected, age-old problems to be overcome and inveterate habits to be eradicated. As in all areas of Italian society, there is also a great reservoir of idealism to be drawn on, and not just the old, familiar vices. This is equally true of schools, university, or the health service.

Forty years after the foundation of the Republic, we can look back on the progress we have made and see the shortcomings that still have to be made good. As politicians, we must feel responsible for the latter rather than proud of the former; this is the sad truth of the matter.

Giovanni Spadolini

(A letter published in the daily newspaper "La Stampa")



NOTES ON TERRORISM

If we were to enounce a general definition of terrorism, we could consider it the methodical employment of violence at the service of revolution.

This definition goes against the "blind terrorism" cliché, very fashionable in the superficial conversations and in the current statements regarding this phenomenon.

As a matter of fact, terrorism is in its essence, and mostly, a motivated fact aimed at a well defined end, albeit of varied importance and nature. It aims at overthrowing an existing institutional structure, establishing a new order protesting against a situation, drawing public attention on a specific

political, social or ethnical problem. It is therefore a strategic and tactical tool for fight and propaganda.

But even this comprehensive vision does not suffice to define the problem entirely.

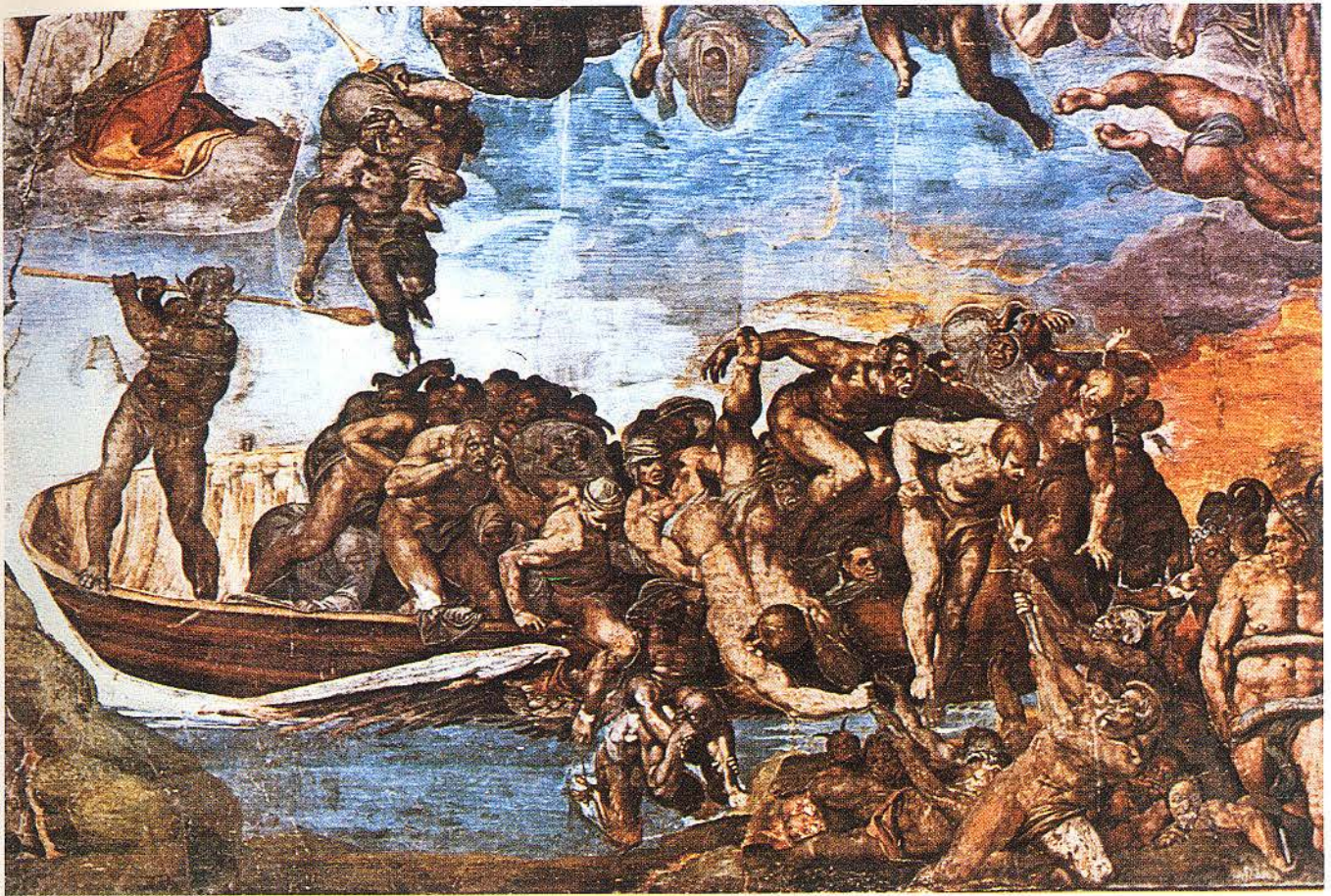
In this regard one is reminded that also the definitions of human events have a destiny of their own: *habent sua fata verba*.

The term and the phenomenon have actually at their origin an official character.

A close consideration of this fact leads us to see in the terrorism of the various historical periods also a tool of government.

The frescoes of the Sistine Chapel, currently being restored among international polemics, belong to mankind as a whole.

We take the opportunity of the present reflections on terrorism to reconsider the mirror-like relation between divine creation and human creativity, in the striking images of the "Last Judgement", in the immense human sphere which focuses destinies and hopes in a supreme gesture, as a definite warning to the wicked. The fresco was painted in the fiery years of the Counter-Reformation in an intransigent and exasperated climate of resurfacing radicalism. The illustrations show some details of Michelangelo's frescoes in the Sistine Chapel.



Emperor Nero, the Inquisition, Stalin's bloody "purges" are some of its significant expression that come to an horrifying synthesis in the "Terror" of the French Revolution, in which Charlotte Corday and the "Chouans" were certainly not the actual terrorists, but rather Saint Just, Robespierre, Barras and Fouché with the guillotine, the roll of the drums of Santerre, the infernal columns of the Vandée repression, the harsh majesty of the sword of law.

A suggestive but widely improper comparison has led some to define terrorism as the atomic bomb of the poor.

The comparison may appear attractive but it is not entirely appropriate. The nuclear weapon is an intimidating tool, but is also an explosive tool, capable of causing enormous damages, destroying the adversary's industrial or military potential, causing huge human losses.

Terrorism instead is, and remains, mostly a psychological

weapon, whose material effects are only means – of generally modest consequence – which must not be mistaken for the goals of the operation.

If we were to insist on the value of terrorism as a weapon, we could be led to conventional or contrived distinctions. We could talk about a tactical employment of terrorism, in the sense of selective and limited actions, and of its strategic employment, with reference to wider-range and more general actions.

Nevertheless, we would remain in the realm of apparently logic but substantially false subtleties.

It is in fact quite evident that a bomb is not planted in a cinema in order to kill a few people, but rather to frighten or exasperate those who could have been attending the performance. Similarly, the destruction of a bridge in order to block a military convoy is not real terrorism, but it would be if the aim of the destruction

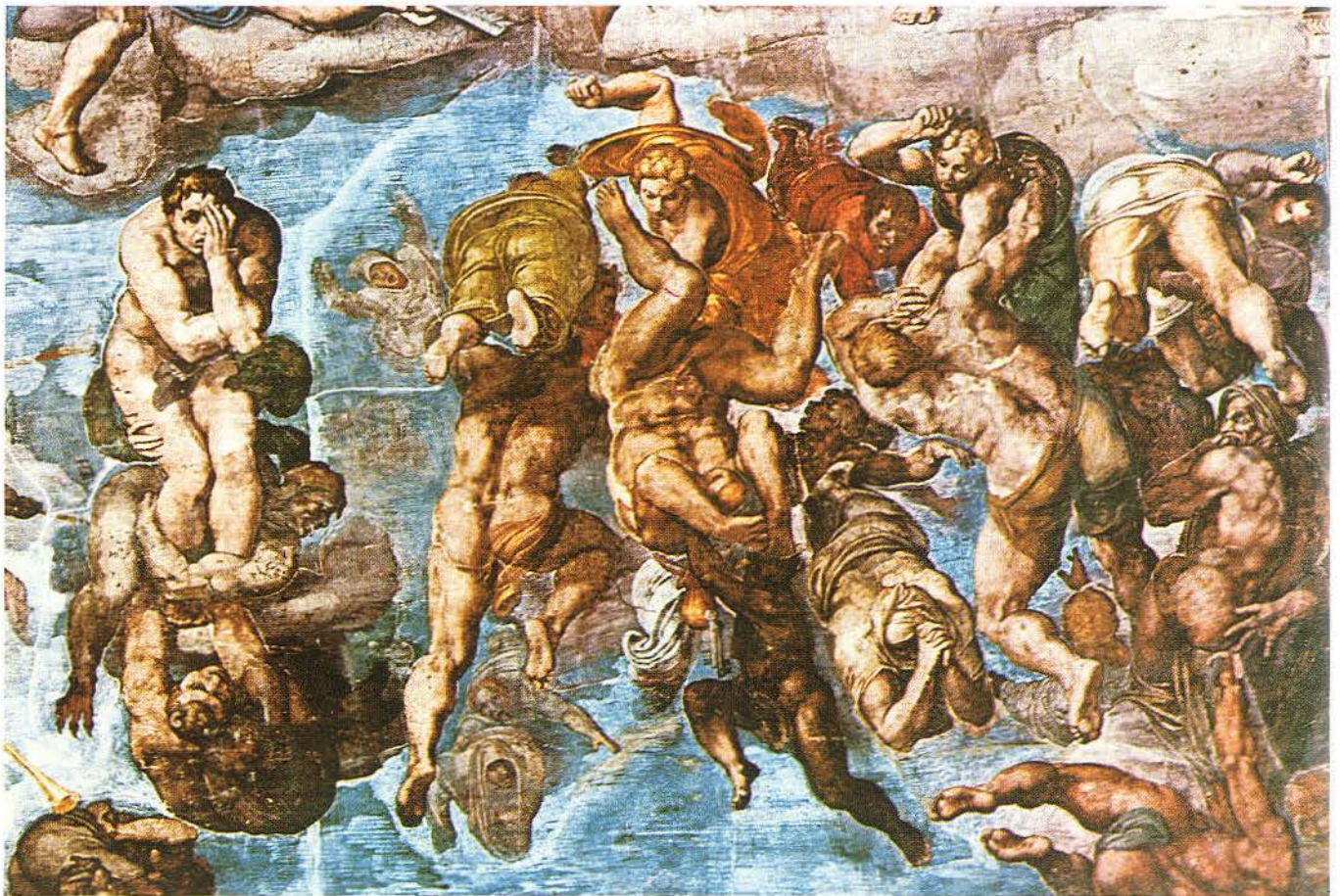
were that of preventing the local people from going to the market.

In other words, we are in a sphere resembling more propaganda than an armed struggle, even though its consequences are bathed in blood, almost always innocent.

An instrument of critical periods, of times with an uncertain future, terrorism has been rightly considered a cocktail of explosive and psychology, whose consequences actually derive from the dosage of the two components, which must be adapted to the times, places and people.

The psychological component – often the prevailing one – makes terrorism a kind of absolute weapon.

Being a terrorist is first of all a mood, a mental attitude, which presupposes special ethical conceptions as regards both the surrounding reality and human life, class relations, ethnical or national situations.



In order to withdraw from terrorism, one must therefore undergo an actual conversion, which cannot be obtained solely by the police or with the employment of arms. It is easier to kill than to convert a terrorist, but it is precisely this difficulty that must spur those interested in the conversion, keeping in mind that the special mood cannot arise and develop without the support of a climate, an ambience, a base, lacking which terrorism would rapidly become sterile and ineffectual.

The need of a propitious environment is the force and, at the same time, the weakness of the terrorist weapon. This in fact can be employed – at least at the start of an insurrectional movement – only by isolate individuals or small groups. Consequently, the fight against terrorism must tend to eliminate these individuals or groups and this is rather hard, if not impossible, if the authorities cannot count on the positive support of the population.

The problem is not easy because, on the one hand, terrorism develops usually in situations of tension, which makes it difficult for the people to support the established authority; on the other hand, the simple neutrality or the indifference of the population are not sufficient.

With a physiological comparison it can also be said that the fight against terrorism can develop in either a surgical or a medical form. The first tends to be painful and dangerous, the second, slow and uncertain; with the combination of the two forms, one can perhaps – up to a certain point – neutralize the inconveniences of the one with those of the other, but the therapy remains nevertheless very delicate.

The editor of "Il Giornale", in a recent article on terrorism writes: "Clausewitz said that war is nothing but the continuation of politics with other means. If he were alive today, he would perhaps say that terrorism is

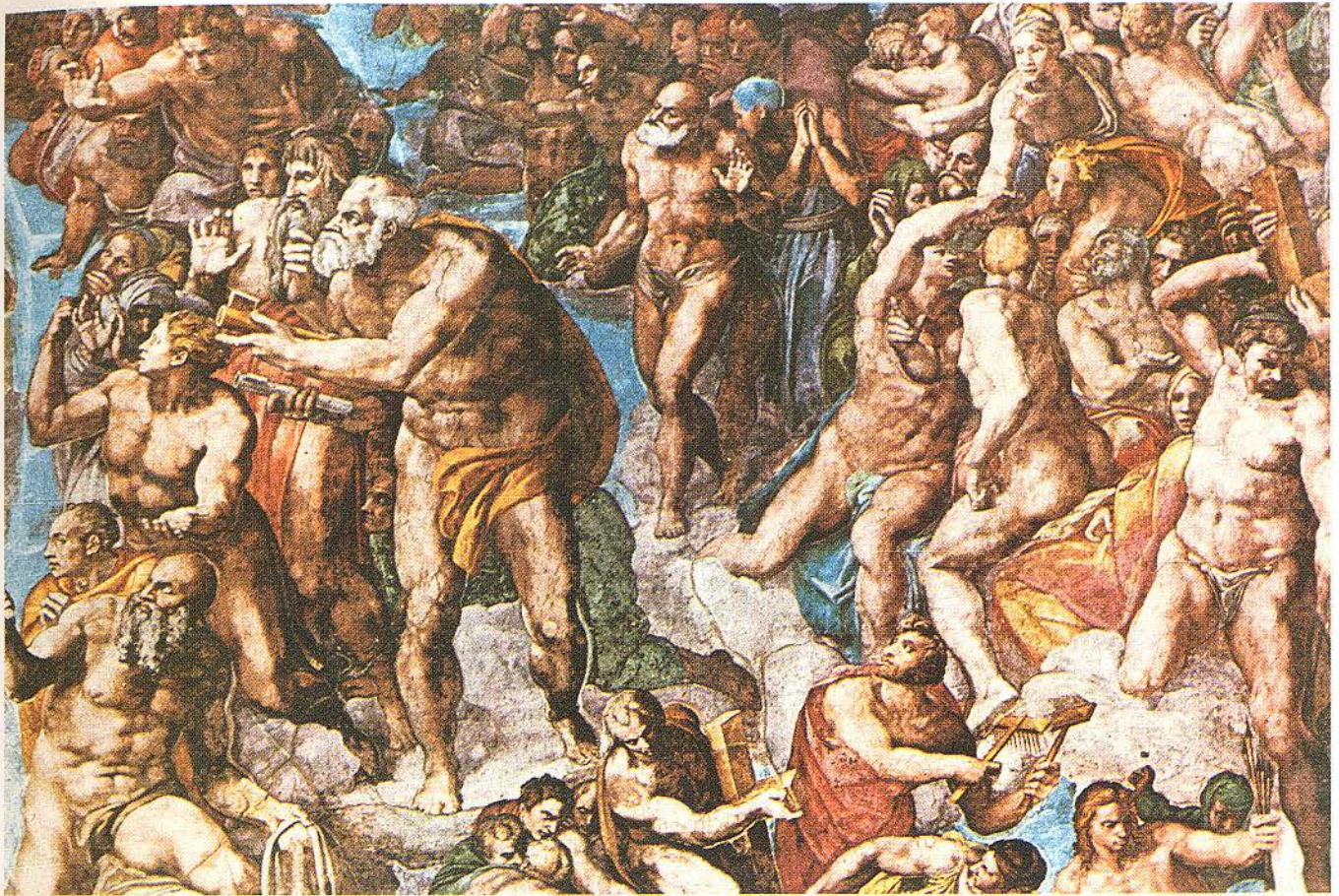
nothing but the continuation of war with other means. War, made impossible by nuclear weapons, has found a substitute, which in the end will probably lead us to regret the real thing. Terrorism does not kill so much as war, but its killing is worse. And, above all, it is much more difficult to be fought because there is no target".

These are strong statements and serious considerations, which are nevertheless largely confirmed by statistical data.

First of all, it must be pointed out that the number of terrorist attacks has increased sensibly during the last fifteen years.

The "Risks International Inc.", an American firm which specializes in the study of this phenomenon – mentioned by the "U.S. News and World Report" of June 8, 1985 – recorded 293 major terrorist incidents in 1970.

From that year a slow but continuous escalation has occurred until 1977, followed by



a rapid acceleration in the two following years (with 2585 attacks in 1979), by a slight decrease in 1982 and again by a sudden sharp increase.

In another document, issued at the end of 1984, the U.S. Government reported that:

- 5175 attacks recorded around the world from 1973 to 1983 had caused 3689 dead and 7791 injured;
- of about 500 terrorist attacks made in 1983, about 40% were aimed at U.S. citizens;
- still in 1983, 37.2% of the attacks concerned Western European countries, 25.6% Latin America and 22.8% the Middle East and North Africa, 7.8% Pacific Asia, 3.4% Central and Southern Africa, 2.4% North America and only 0.8% Eastern Europe and the Soviet Union.

These are statistic data that give a sufficiently clear vision of the phenomenon, but require two appendixes.

The first is due to the realization that, though the percentage of attacks occurred in the U.S. is very low (2.4%), very often the U.S. citizens are the target of terrorism all over the world.

The second is the rather sound evaluation expressed by an American expert (Robert Kuppermann of the Center for Strategic and International Studies of Georgetown University), who in an interview of the autumn 1985 said: "sure, if one compares terrorism with other forms of carnage, be they crimes or road accidents, from the point of view of numbers it represents only a minor problem".

It is this numerical evaluation which – though statistically correct – can cause a detrimental moral confusion. It can happen in fact that, also due to the "show-information effect", owing to which a daily scoop is sought, which should erase the memory of the one occurred the day before, public opinion rapidly overcomes the temporary

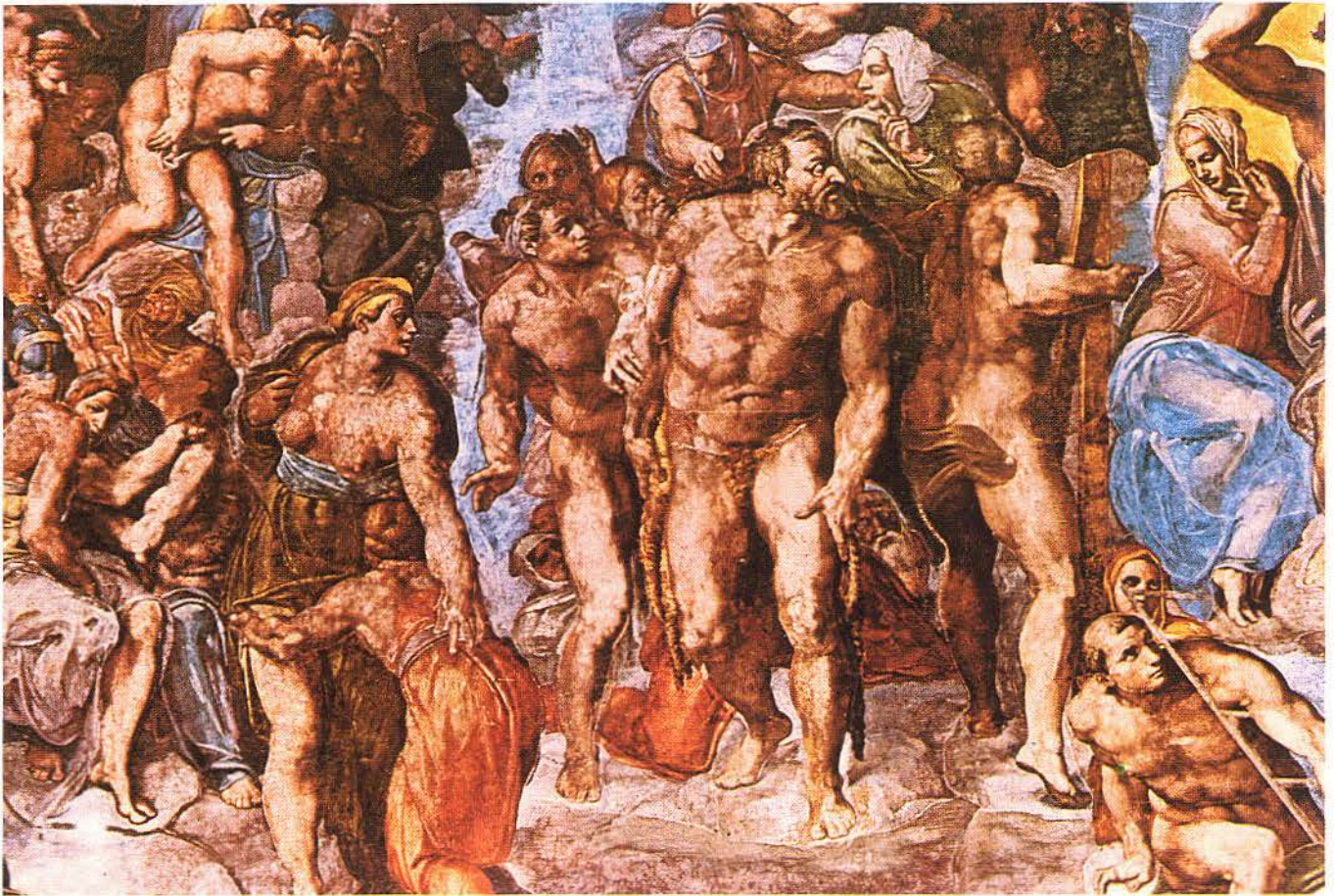
emotion caused by any new terrorist action, without giving the antiterrorist fight the necessary importance.

Thus a despicable habit to the phenomenon grows, due to which, on the one hand, the mass media provide terrorism with the amount of publicity it needs and, on the other, the average citizen, at the end, falls prey of a regrettable state of indifference, supported by the ever increasing diffusion of daily violence as well as the meager satisfaction of having personally escaped it.

What we have said up to this point, beyond the statistical findings and the subsequent – and valid – considerations, reconducts the problem of terrorism to its typically dimensions and, more than that, to the political mould that characterizes it.

This essential aspect has found, and still finds every day, creditable and effective supporters.

In a conference at the "Jonathan Institute", in June



1984, George Shultz affirmed: " ... when terrorism cannot produce anarchy, it can try to induce the government to an excessive reaction, such as, for example, the imposition of harsh measures of control and restriction, which ultimately alienate the support of the population ".

This danger exists.

Towards the end of 1985, three cases occurred, which were managed in a harsh manner.

On September 25, 1985, three Israeli tourists are killed at Larnaca by Palestinian terrorists. On October 1, the Israeli air force attacks in retaliation the PLO Headquarters near Tunis causing about 60 dead.

On November 7, the Colombian Army attacks a few guerrillas, who have barricaded themselves inside the Court House of Bogotá and causes the death of about one hundred people, mostly among the hostages held by the guerrillas.

On November 24, a group of Egyptian special forces attacks an hijacked aircraft coming from Athens and forced to land at La Valletta, and kills 57 people, adding them to the three passengers murdered in cold blood by the hijackers.

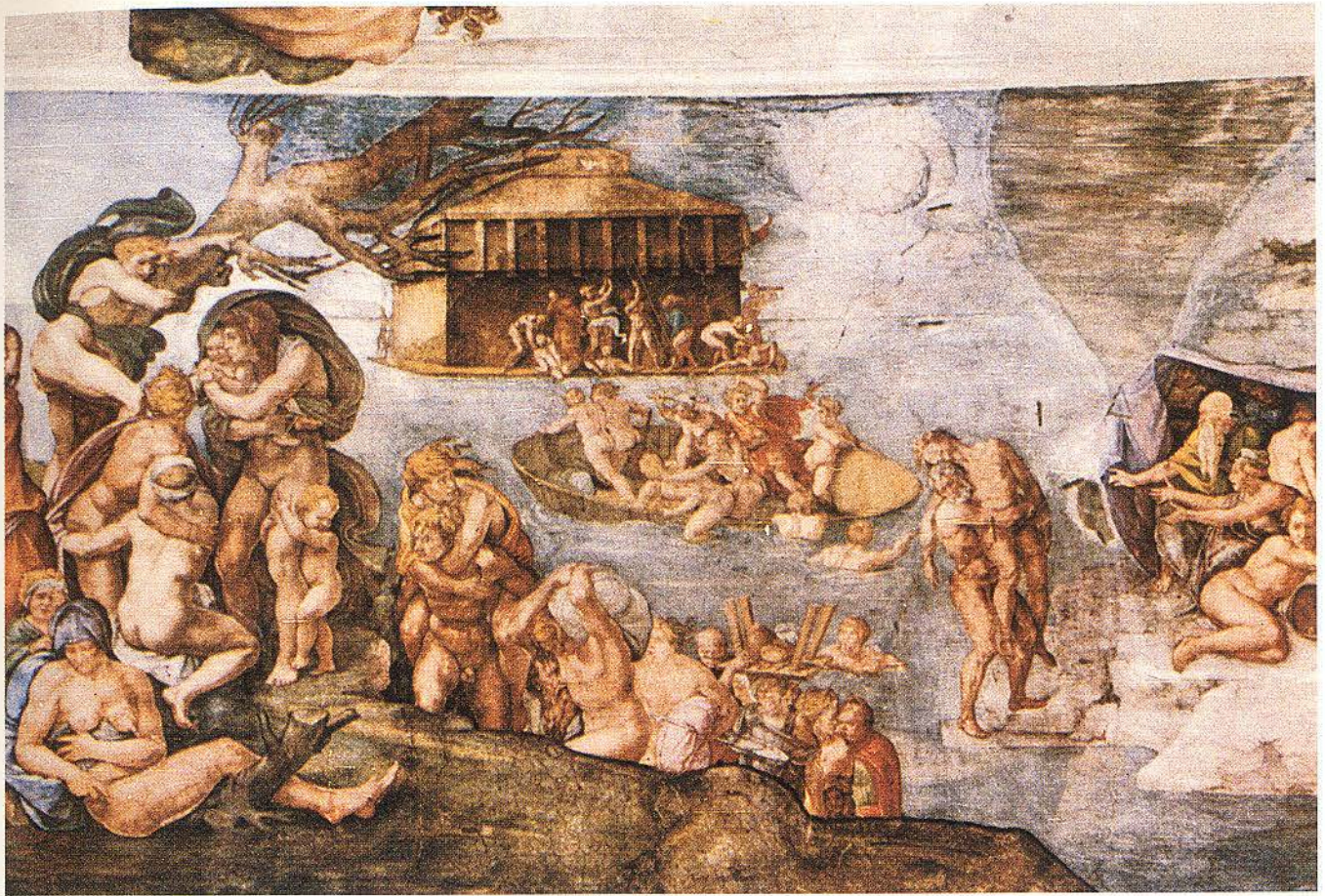
The democratic countries have accepted the hard reality of these reactions, but the fact remains that retaliation – albeit inevitable – on the one hand does not defuse terrorism, as proved by the attacks at the airports of Rome and Vienna of December 27, 1985, and, on the other, it risks to induce the governments to follow methods that may not always be accepted by public opinion.

As a matter of fact, for a democracy, for a State based on law, it is not easy to comply with the rules of democratic dialectics when the opposite party denies *tout court* the validity of these rules and rejects them. It is true that one cannot talk about pluralism, discussion, negotiations,

compromises with someone who, with totalitarian mind and methods, does not accept a peaceful confrontation, represses individualities, treads on dissension.

But it is also true that with terrorism, as with crime in general, an exclusively repressive response does not solve the problem. The answer must be mainly a political one. If terrorism is to lose ground, if this mixture of situations and forms of violence – which outside any logical meaning is classified as international terrorism – is to be prevented from causing fear and death, we must first of all find out the "political" reason of terrorism; why the Israeli dead intermingle with the Palestinian victims; why, in a world in which tons of explosives are statistically available to each inhabitant, there is this antinomy between reason and justice on one side, and arrogance and killing violence on the other.

This is also what President Reagan affirmed in his message



to Congress of April 26, 1984: "... we must admit that terrorism is a symptom of greater problems. We must therefore strive to extirpate the causes of frustration and despair which produce and feed terrorism".

Nevertheless, this stubborn willingness to discover the roots of the evil, this continuous effort to reach clear agreements and constructive negotiations must not be separate from an attitude of coherent resolve in opposing and retaliating – in case of need – any manifestation of unlawfulness and violence.

This is also the undeniable meaning of Minister Spadolini's statement on the occasion of the 327th Anniversary of the "Granatieri di Sardegna".

After mentioning that "... all of Europe is living days of great anxiety and worry" because "for months and months an inhumane and monstrous challenge has repeatedly confronted us in our seas, in our cities, in our airports: the challenge of international

terrorism", the Minister of Defence continued: "... terrorism must be isolated, terrorism must be defeated; this is the imperative of the moment, to which the Old Continent and the West as a whole must answer, in the indispensable partnership between Europe and the United States".

"Defence against terrorism" – Minister Spadolini continued – "is the primary, essential interest of Europe, which cannot be renounced".

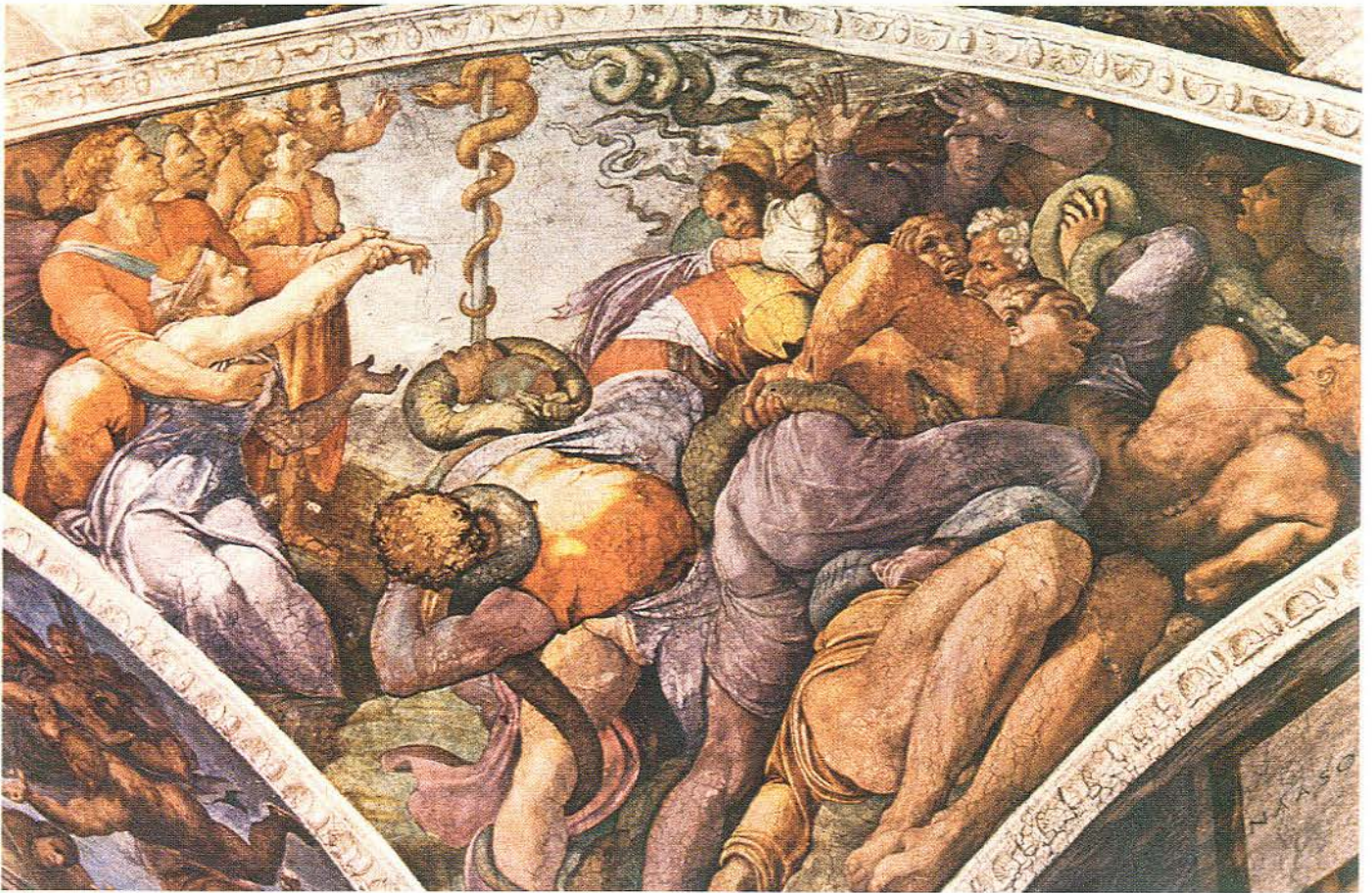
And this defence, in order to attain its goals, must be seen not only as a coordinated adoption of measures regarding public order and political provisions. It must instead be considered as a complex operation, that can have a positive outcome also through the solution of a cultural problem.

And it is in this essential aspect of the intricate present reality that Europe – besides its political and military options – can give again deep meaning

and significance to its existence, its function, its responsibilities, in line with the universal contents of civilization.

Modern civilization – as a matter of fact – despite the contradictions that tarnish its image and the serious disorders that affect its essential values, is anxiously and determinedly seeking a reawakening of consciences and a reemphasizing of these values. But – as I wrote in a previous article (*Rivista Militare*, Eng. Ed., no. 1/1986) – the theory of the repetition of the historical phenomena leads to hope that, as the end of the first millennium opened the way to development of a more human conception of the human being in the light of St. Francis' teachings, similarly the end of the second millennium brings about a sharp moral and cultural progress and the consequent advent of the "new man".

It will be this man – engaging all his strength in the construction of a more serene



coexistence among all peoples – the sole antidote against the execrable and absurd manifestations of terrorism. It will also be this man who, to the mentioned cocktail of explosive and psychology, which is the essence of

terrorism, will have the knowledge and the ability to oppose a well balanced mixture of political, military and social measures, introduced and operating in a catalyzing cultural contest, capable of encouraging the civil progress and the

victory of the universal spirit over matter.

Ciro Di Martino

NOTES ON TERRORISM

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NEGOTIATIONS

CONVENTIONAL FORCES!



FOREWORD

It could appear rather embarrassing to tackle the subject of **security from the point of view of disarmament** for someone who – owing to the office he has held until recently – has had, like myself, to study the same subject – that of security to be more precise – **from the viewpoint of the threat**, the latter being a key element to which it was my duty to refer in dealing with the programming, planning and management of the military component under my responsibility.

In connection with the new office I have been appointed to, taking part in negotiations which have as their goal the reduction of forces in an area – Central Europe – of very high density and therefore of very high dangerousness, one could question the limits of compatibility, at least from the speculative standpoint, between the two different evaluations of the same problem.

Apparently, in fact, the stress I laid then – and I still lay – on the need to continuously update the military instrument according to the tasks foreseen, and referring to well defined employment options, would be in contrast with the emphasis I feel I have to place today, institutionally, on the need to start a process of gradual reduction of the risks of confrontation in the area previously mentioned – which is so closely bound to our own, as regards the geostrategic aspect – with the aim of reaching **a ratio, between the opposing sides, at the lowest possible level.**

As a matter of fact the contrast is more apparent than

real, since both points of view logically apply to the same **goal**: the creation of conditions of sufficient security; security per se, prescindendo from the level of the balance of forces, in the first instance; equal security for both parties at the lowest possible level, in the second case.

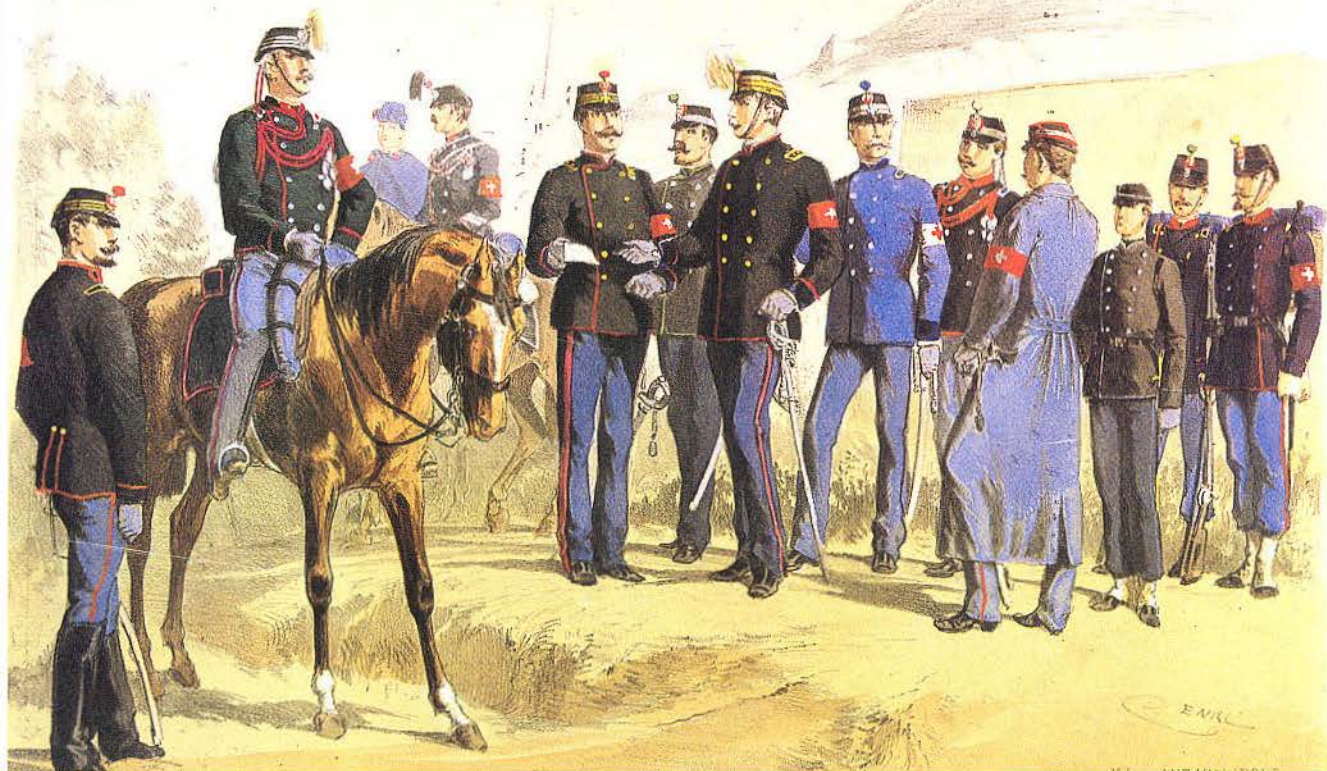
To be even more precise, I believe I can say nevertheless that, even with this different expression, the professional thought related with my origin, which I do not intend to put aside, prompts me to remind to those sometimes hurriedly advancing judgements and suggestions that, on the military plane, **security is – especially today – a question of balances and, in the light of the nuclear impact, is affected by the incidence of vulnerabilities that must be of equal degree for both parties.**

In the modern strategic vision, in substance, the essence of security is in the **balancing of forces** and in a simultaneous **vulnerability** which expose to equal risks both parties to which our evaluation refers.

Any serious talk on armaments control and disarmament – seen, therefore, in a political light and in the negotiations' developments – cannot disregard this fundamental imperative.

Any other different formulation would create reasons for concern, due to the coming into play of extremely dangerous destabilizing mechanisms.

All this obviously disregards the moral considerations, with no reference to the employment of forces and means, keeping in mind that the goal is the mutual annulment of the respective possible aggressive ambitions.



Tenente d'Artiglieria

Capitano di Fucile

Sergente Maggiore di Brigata

Maggiore d'Amministrazione

Capitano d'Uomo Maggiore

Colonnello Insignificante

Cap. Ant. Mary di Fucile

Ten. Colonnello

Tenente d'Intendenza Maggiore

Carabiniere 1° Reg. d'Artig.

Capitolo

Parabrezza 3° Reg. d'Artig.

GENERAL

After these preliminary remarks, I shall immediately add that the **negotiations on conventional disarmament** which – for the area that concerns us – have been plodding along for as many as thirteen years, have been negatively influenced by the **effect of four concurring factors**:

- the original defect, which has led to give birth to a creature in which both parties, within certain limits, believed but with too many penalizing reservations;
- the inferiority complex vis-à-vis the nuclear forces' supremacy; a supremacy that in fact becomes a priority which, nevertheless, on the sheer plane of pure rationality, could be

considered rather questionable since the problems of a nuclear holocaust certainly do not vanish with the reduction of a few hundreds of thousands of warheads or delivery vehicles, and the possibilities of a first and second strike can decisively be influenced by limitations and restrictions on the technical and deployment planes;

- the preference given to bilateral relations, which is closely connected with the preceding factor, which – this cannot be denied – offers, moreover, better possibilities in the conduct of the various steps of the negotiations and is, doubtlessly, remunerative as regards the affirmation of the very concept of Superpower;
- the indeterminacy of the parameters which configure the

essence of the conventional forces, especially today, if the quantity and quality of armaments are to be analyzed in order to deduce their operational capabilities, vis-à-vis those of the other side, based on an analogous comparison.

To these four factors we can add that for the negotiations I am going to discuss the initials MBFR (Mutual Balanced Force Reductions) have been chosen: they are not easy to assimilate and are difficult even for the experts. With a perfectionism worthy of a better cause, the concepts on which the negotiations rest (a reduction of forces that ought to be mutual and balanced) have been put together in the abbreviation. These concepts, in any case, are not shared by the other party which, by deleting the "B"

of "Balanced" from the very beginning of the talks, meant to express with... clear letters its intention to object to the West's assertions about the superiority of the Eastern bloc's conventional forces in Central Europe.

AREA CONCERNED

The area considered for the reductions is a well delimited one and practically includes:

- on one side, the territories of Belgium, Holland, the Federal Republic of Germany and Luxembourg, with all the forces deployed there, including therefore the forces of the United States, United Kingdom and Canada, but excluding the French forces, as a result of France's refusal to be involved in the negotiations;
- on the other side, the territories of East Germany, Poland and Czechoslovakia, with all the troops stationed there, including therefore the Soviet forces.

The two parties have a differently characterized background and are, in practice, the two Alliances – NATO and the Warsaw Pact – which can have a direct relationship at the Vienna forum, with all the ensuing reflexes on the political and strategic plane.

The direct participants (the countries whose forces are in the area of reduction) and the indirect participants (the countries outside that area; on one side: Denmark, Greece, Italy, Norway and Turkey; on the other: Bulgaria, Rumania and Hungary) at the MBFR negotiations have the possibility to confront the problems of security with a perspective that cannot but go beyond the Central European area.

In this regard, in fact, for a clearer explanation of the different **background characterization of the area earmarked for the reductions**, I wish to point out:

- on the one side, the **continental compactness** of a

Euro-Asian complex, in which the Superpower (USSR) – thanks precisely to geography – has the amplest possibilities of **manoeuvre by internal lines**;

- on the other side, the **scarce depth, the indentation and discontinuity** of the Euroatlantic complex, in which the Superpower (USA), from a distance of 5,000 km, must cross an ocean to send over forces, equipment and supplies in case of emergency, with the consequent **vulnerability**.

THE MAIN DIFFERENCES

Over the years, there has been much discussion about the **geographic asymmetry**, with a stubborn opposition by the East, which refuses to admit all the negative incidences for NATO, stressing the presumed U.S. capabilities as regards air transport and availability of substantial stocks of weapons, equipment and supplies in the Allied countries of Western Europe.

The **nonacceptance of the concept of balance** was most evident at the time of the agreement on the **data concerning the opposing forces** – a fundamental element in order to determine the size of the reductions necessary to reach an equal ceiling – when the Eastern bloc tried to impose its own figures, which were very different from those in our possession.

This caused a stalemate which went on for years, until it was decided to sidestep the problem initially and try to solve it later with a different procedure, once some kind of mechanism had been started, even for symbolic reductions.

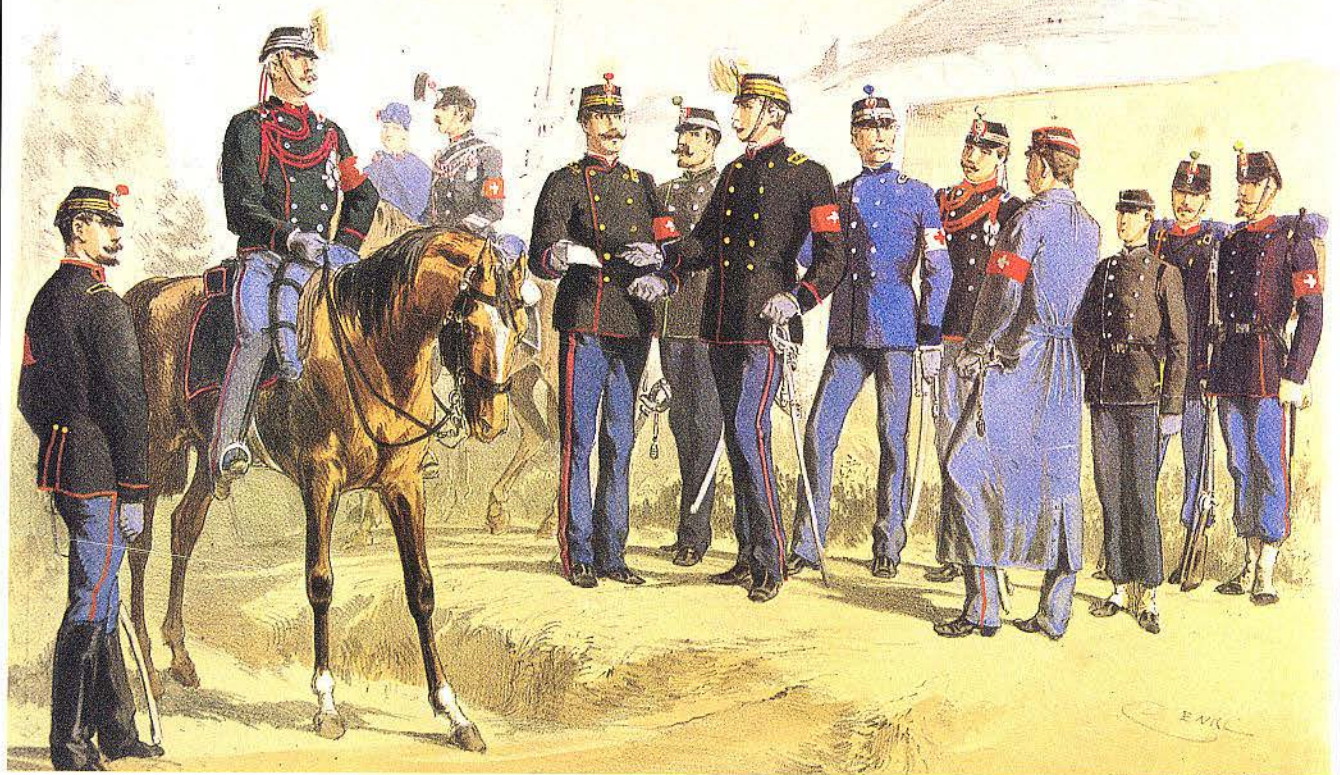
The failure to acknowledge the **geographic asymmetry** has brought to light the problem concerning the **redeployment of the weapons** of the units to be withdrawn: the East demands that the American forces included in the reduction quota be transported back across the Atlantic, while their own forces

(weapons included) would move back a few hundred kilometers, within a territory that does not prevent in the least their hasty return on the positions previously left with full operational capability. This is a further element of conflict which is added to the **refusal by the Western side to take into consideration, for the moment, the more general question of the reduction of armaments**, owing to the difficulties – already mentioned at the beginning – of a comparative evaluation of performances and possibilities not easily comparable. The East has repeatedly posed the problem of armaments, insisting with its request to consider them without perhaps taking adequately into account the "boomerang effect" that could ensue from it, due to their superiority in materials that more synthetically embody the **operational capability in terms of impact, fire and manoeuvre** (tanks, artillery and armoured vehicles) supposing one could carry out a comparative assessment of the confronting forces with reliable scientific criteria and within a reasonable time.

The West's refusal has its valid factual justification, even if the other side slyly points at the existence of simple operational considerations, which would prompt NATO to gain time in order to carry out a programme of modernization by improving the "quality factor" which would establish a different balance.

Thus an allusion is made to the **emerging technologies**, which, on the other hand, should allow the employment of new strategies that should make their resolute effects felt in the depth of the deployments.

Balance, asymmetry and armaments, within the framework of a security considered collective and indivisible by the West, call the attention on particular aspects concerning the countries of the Alliance which take part in the negotiations with a particular status for, being outside the



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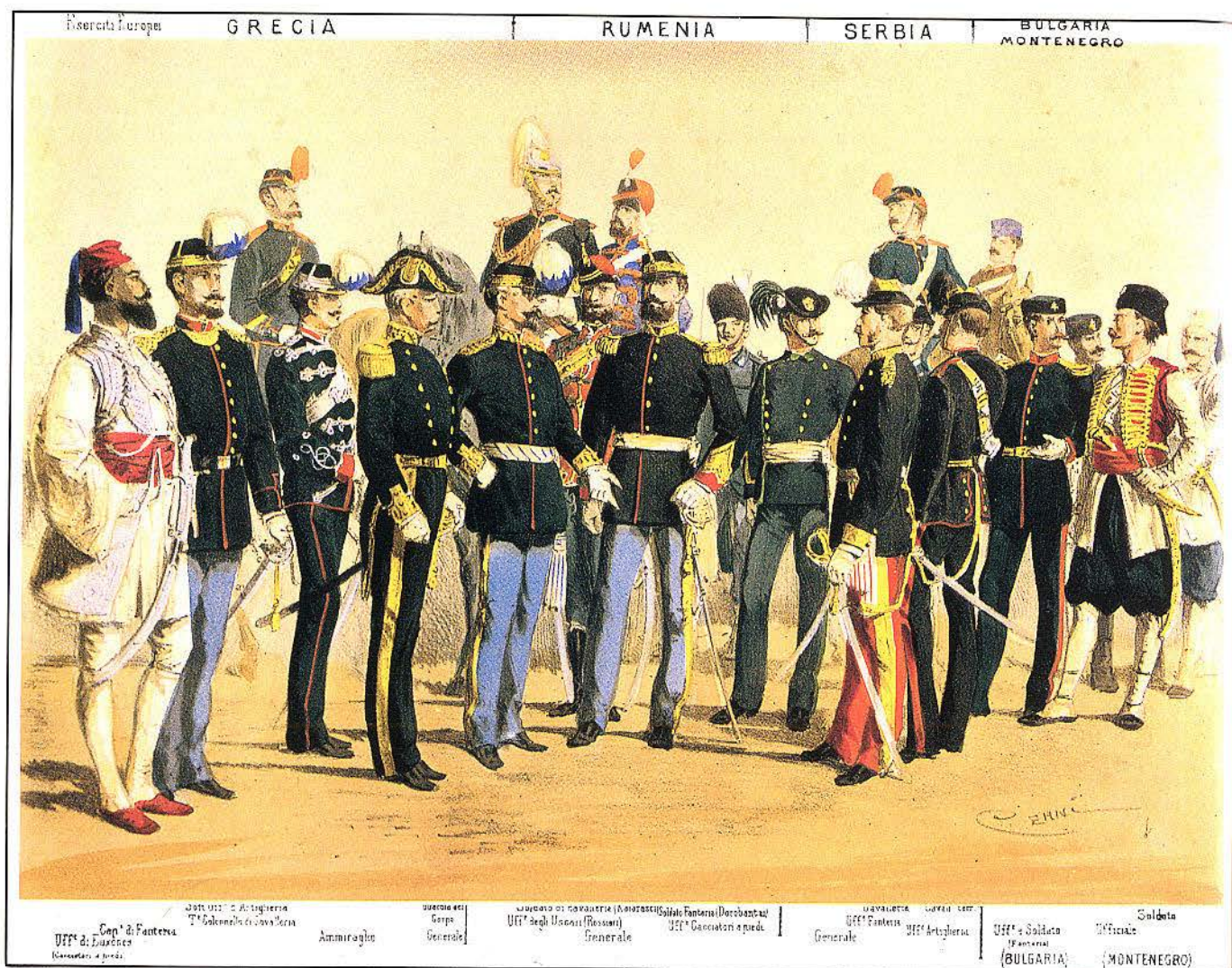
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area, they are only indirectly involved in the process of reduction. These are the so-called **countries of the flanks**, which I have mentioned before and are generically indicated as **indirect participants**.

Italy is among them, as we said.

In pursuing the objective of **non-diminished, equal security**, the possible changes in Central Europe must not add – through the redeployment of the forces involved in the reduction – more danger for the flanks.

Setting aside all other considerations, it is precisely on the Southern flank that our Alliance – owing to the interruption of the territorial continuity, due to the interposition of countries which do not participate in the Alliance – presents a **structural asymmetry**, equally due to

geography, which cannot be overlooked if the objective is a situation of security.

I do not only refer to a request of precise restraints in the redeployment of the forces withdrawn from the area of reduction, but also to the **possibility to extend beyond such area the applications of some associated measures** (warning of military activities outside the normal garrisons, invitation of observers to exercises of a certain level, etc.).

Here again the position of the two parties do not coincide, so that the Eastern bloc has repeatedly and firmly refused our request, interpreting it was the expression of a plan with intrusive purposes.

In the long history of the negotiations, **proposals and counterproposals** have followed one another with diversified

itemizations, according to the times and phases, with elements in common, expressed sometimes in a differing bargaining picture. An element which remained **unchanged with time is the quantitative goal**, the so-called **overall ceiling** of the forces at the end of the process of reduction, established for each party in 900,000 men, of whom 700,000 belonging to the land forces. But also here it emerges an element of dissension of not secondary importance as regards the **distribution of the reductions within each Alliance**. The West in fact maintains that, apart from the "sub-ceilings" of the components of the leader-powers of the two sides (US and USSR), the difference needed to reach the overall ceiling is an internal business of each individual Alliance and must be



UFF. in cappa
T. Col. di Fanteria
Peric Guardia di Palazzo
UFF. in cappa
T. Col. di Fanteria
Colonnello d'Artiglieria a cavallo
UFF. in cappa
T. Col. di Fanteria
Ammiraglio
Bascia (Tacha)
(Comandante)
Cavalleria
Artiglieria a piedi
Artiglieria a cavallo
Zemef. Genleray
Garnison a piedi
Batteria d'Artiglieria

entered among the negotiations issues. That is, they state the principle of **collectivity**, which they consider indispensable, vis-à-vis the request of the East to define also the **national sub-ceilings** with the concealed intent to put forward again the very binding clause, already proposed in the past, which provides that – once the reduction process is completed – no participant can avail himself of forces above 50% of the "collective ceiling".

It is quite evident here that the real purpose is to switch from a confrontation between the two Alliances, as individual bodies, to a multilateral entente concerning every individual country, with all that follows in the political and politico-military sphere.

The short summary hitherto provided has allowed me to

focus on some of the **major differences**, whose discussion has imparted a pendular motion to the negotiations, marked by temporary approaching of positions and subsequent partings, by approaches first requested and then refused when accepted by the other side, by monotonous repetitions of theses and countertheses, all contributing, in one way or another, to emphasize the basic dissensions (starting data, asymmetry; armaments; collectivity; applicability of associated measures beyond the area of reduction).

Among the fundamental dissensions there are also the **complex problems of control**, which I have not mentioned yet, and which I intend to develop later in this survey, for these problems deserve our best attention, as they concern the

essence itself of the aims of a possible agreement. In the long history of the negotiations, these differences have constantly sprung up within the various Western and Eastern proposals, all characterized somehow by a certain number of **ever present basic elements** (reciprocity of reductions with a non coincident ratio between the parties and, therefore, matter of a heated dialectic confrontation; division of the reduction process in phases concerning, successively or simultaneously, the "non indigenous forces" of the leaderships of the two sides and the "indigenous forces" of the direct participants; provisions for guarantee or stabilization measures), sometimes together with **additional and contingent elements** (for instance, the inclusion of the nuclear



component, with "option III", presented by the West in December 1975).

THE MOST RECENT DEVELOPMENTS

In the **most recent years**, between April 1984 and November 1985, the long dialogue – forever discordant since each party supports its own idea of agreement – has come to be centred on **two opposing fundamental main lines**:

- on the West's part (April 19, 1984): an **all-inclusive solution**, aimed at reaching the ultimate level of forces within five years, preceded by exchanges of data about the strength of the forces, supported by verifications and associated "confidence-building measures";

- on the East's part (February, 14, 1985): a **solution limited to a preliminary agreement**, aimed at obtaining minimal reductions of American and Soviet forces, and at freezing for a 3-year period the levels of force and armaments of the direct participants, with the exchange of data relevant only to the list of the units to be reduced of withdrawn, with the prospect of a subsequent global agreement, should it be deemed feasible.

This was the outcome of long a negotiatory exchange, during which the two parties had been able to face each other with moves and countermoves, uncovering the differences I have discussed at length, but also accumulating – albeit timidly – ideas for convergence over aspects of non-secondary importance.

With the valuable intentions of getting over the ensuing stalemate, the Western bloc announced, at the **closing of the last session of 1985**, that some prejudicial questions had been overcome, and made known the essential points of a new initiative, presented in its entirety at the beginning of the first session of 1986, on January 30th; the initiative accepted the latest main lines of the Eastern proposal (the one made official on February 14, 1985, titled "Basic Provisions"), putting aside – an arduous concession indeed – the problem of the definition of the strength data and accepting the idea of a sectorial agreement, to be implemented in a single period of time, in its turn divided in two different phases (that of force **reduction**: 5,000 Americans and 11,500 Soviets, to be carried

out within a year, and the immediately successive one, the **non-increase of the forces** of all the direct participants, which should be maintained for three years). At the beginning of the last phase, there should be an exchange of information about the existing forces, with detailed elements down to battalion level.

Once the knot of the initial data is solved and the West reiterates its intention to let the interested parties decide the deployment of the weapons of the units withdrawn, **the all-important element in the entire manoeuvre is the system of control**, which does not concern only the phase of reduction but, even more, that of non-increase of the forces.

Our acceptance of the general lines of the last Eastern proposal, agreeing in fact to as many as 16 points, adding only an organic framework of guarantees – and it could not be otherwise – aimed at ensuring the compliance with the possible agreement, meant more than a simple search for a compromise.

It was the expression of the precise political willingness to give a decisive turn to the negotiations, making the other side face the consequences of a possible refusal.

At present the problem shifts from the investigation of the areas of dissension to an organic composition of the areas of convergence; nevertheless, there is still the unavoidable necessity to control step by step, through a strict mechanism of verifications, that the obligations are met by both parties. As in other negotiation forums, also in Vienna the stumbling block is in fact the acceptance by the East of such mechanism, with the aggravation that – unlike the “nuclear”, where this necessity, albeit always valid, can be faced in many ways – for the “conventional”, in order to obtain a reliable control, it is necessary to have a whole system of “observation posts” and “on-site inspections”, complementary to the so-called “national technical means”. By

stressing the suitability of the latter, the Eastern bloc tries to reduce our request, though admitting in principle the concept of control and timidly moving towards less preclusive positions.

Because of this conditioning, and in the attempt to evade the West's pressure, the Eastern countries have hastened to produce, on February 20, 1986, with a speed rarely seen at the Vienna Forum, a new counterproposal in the form of a Draft Treaty.

This document repeats the main lines of their previous proposal – which the West had accepted with the 1985 initiative – integrating them, as regards the guarantee aspects, with elements taken from the old repertory, with formulations that do not meet in the least the requirements of reliability of the pursued agreement.

In substance the answer, once more, does not come up to the West's expectations and, searching for a compromise, does not take into account our much argued-about concessions.

On the other hand, the authoritative statements of high Eastern officials had given the feeling, in the recent past, that there was more than one reason to hope for a quick favourable turn.

Within this framework, the Eastern side contends that they have supplied all the elements necessary in order to proceed, without interruption, to the drawing-up of a draft treaty, as if the points of dissensions had been completely settled.

As a matter of fact, the proposal of February 20, 1986, is a countermanoeuvre that the East has deemed necessary to develop in order to evade our initiative. Starting with the charge that our document is characterized by “one-sidedness, imbalance and lack of realism” and referring explicitly to the discussed chapter of verifications, in the following explanations the Eastern negotiators pointed out the aspects of the document which they consider to be questionable:

- the limited size of the reductions;

- the exclusion of the armaments, a fact that limits the significance of the agreement and complicates the system of verifications;

- the definition of the forces' “sub-ceilings” during the “non-increase” phase, which concern only the United States and the Soviet Union and result in an obligation that regards, on one side, only one quarter of the NATO forces, and on the other, half the Warsaw Pact forces (this being the ratio, in the two Alliances, between the forces of the Superpower and that of the respective direct participants in the area of reductions).

The real, important problem is the **verifications package**, which includes, in the Western region, two separate measures:

- the establishment of permanent **entrance and exit points**, with the relevant observers, to be set up on both sides already during the phase of force reduction, with the obligation of passage for all the forces that go in and out of the area of reductions, with the only exception of individual movements foreseen in detail;

- the right to execute **30 inspections in each year** of the phase of “non-increase” of forces.

The Eastern countries, while accepting in theory the principle of verification, in practice empty it of its content, since they specify that:

- the Soviet “rotation” units, in practice would not transit through the “entry and exit points”, for these personnel, being unarmed and not yet sworn in, still lack “military status” (if entering) and – if in exit – they would be, again, unarmed and with no such “status”, having been discharged when leaving their units; thus, in practice, 400,000 men a year would elude any possibility of control;



Gruppo della Banda di Supporto Cavalleria della Guardia Ufficiale della Banda
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Fanti di Linea Contammaglie Ufficiale di Fanteria della Guardia Ufficiale di Fanteria della Guardia

• inspections are permitted, upon request and with justificative elements – and can therefore be refused – but do not constitute a right and a “routine” procedure; this in reality sanctions a veto right, with all the deriving controversies, certainly unlikely to bring about the atmosphere of confidence which is one of the goals pursued by the talks.

Furthermore, as regards controversies, it is worth mentioning that both the West and the East plan to establish, once an agreement is reached, a **Consultative Commission**, in charge of the activities regarding the fulfillment of the commitments. But also over this matter there are no concordant views, since in the West’s opinion this should be a standing commission and consist of the

representatives of all countries directly or indirectly participating in the negotiations, while, according to the Eastern bloc, the commission should meet only a couple of times a year and the possible admission of the flank countries should be a matter to be defined.

The West and the East face each other from these opposing positions, continuing the usual dialectic confrontation, apart from the hope aroused by recent authoritative statements.

The refusal to meet our requests concerning the indispensable guarantees could lead to sad considerations. In my view, nevertheless, we should not make things worse than they actually are but, on the other hand, we should not cherish too much hope.

THE PROSPECTS

The problems under discussion are not so simple as to permit to foresee their **prospects** in the light of evaluations marked by pessimism or optimism. They ought to be tackled with a **sense of realism**. There is more than one reason to look at the future with well-grounded hopes.

Sometimes, it goes unnoticed to most people that, against all appearances, there is a widespread conviction that the most precious goals of our era are synthesized in the triad: **security, peace and social progress**, but peace is the catalyst of everything so that working for it means working towards building a more certain future.

Most people do not realize, moreover, that through a patient

and persevering activity, in countless occasions and places, in the relations among the "Big" at least, this construction proceeds, albeit slowly. It is exactly in this framework that, above the sentiment, reason rules. It is indeed a fact that, unfortunately, up to now at least, reason has at its root the impact of deterrence, being imposed by the terror of a holocaust leaving neither losers nor winners. It is not much on the moral plane; still, it is something.

It is also encouraging to notice that, as regards the problems closely connected with peace, a **new sensitiveness** among public opinions all over the world is now arising. I do not mean the emotional sensitiveness that expresses itself in the verbose and instrumental protest of variously manoeuvred fringes but that, more scientifically founded, which pursues peace through security.

Although this sensitiveness is, for the moment at least, an endowment of elite minorities, doubtlessly it helps to consolidate a process started long ago, that which is expressed in the **growing rationalization of the strategic confrontation** between the international subjects which have a determining weight in our age.

In this particular vision must be seen, in fact, the negotiations for the limitation of armaments, for their control and for disarmament.

To avoid misunderstandings, I shall add that dialectic confrontation, perception of the terms of the problem and keeping the question open to solutions yet to come, are already signs of rationalization.

The trouble is that, up to now, all has been functioning only as far as relations between the Superpowers were concerned and, as regards some particular sectors, was restricted to well defined areas of primary importance of the Superpowers themselves, while in some other very large areas – of undetermined interest or

still deemed of secondary importance – attritions and tensions elude with worrying frequency every control and are a serious danger for the future of mankind.

To foresee a **global approach** with reference to the scope of its application is still premature. The only hope that can be expressed is that the present initiatives be redefined on the basis of a global approach concerning all armaments.

Meanwhile it must be remarked, with a certain disappointment, that this complex matter, discussed in different forums, does not always attract the attention it deserves, and this is all the more true when the subject is the conventional component. This is the component that paradoxically remains in a subaltern position, the poor relation in every strategic evaluation. It should deserve, on the contrary, a better consideration, if for no other reason because the experts should know that the conventional component is indeed the starting point of the evolutionary-involutionary process which has led to the **modern politico-military and strategic issues**.

These by now revolve around the **credibility limits of deterrence**, since more and more clearly one detects the signs of a diminishing credibility of the nuclear employment on which deterrence is based.

In the paralysis of action, **more updated strategic forms**, practically with "zero risk", find their free expression; they permit to pursue important political goals and therefore assume, eventually, particular prominence for the considerations based on cost-effectiveness. Not to mention the prospects that a possible implementation of the "star shields" – if they were to annul the impact of the nuclear factor – would open for a **full revaluation of the "conventional" and "neo-**

conventional", i.e. that of the "emerging technologies".

Within this framework, it seems therefore logical to **give a different attention to the conventional balances**. This is particularly important for the Western Allies who, owing to the force's imbalance vis-à-vis the other side, have had to define strategies of employment hinged on gradual and growing responses, in which the "probability of first use" is not a theoretical assumption only, but a concrete element for estimates and planning.

The balance problem arises again, therefore, as regards the "conventional", because the deterrence function, which would be missing as a consequence of the possible disappearance of the "nuclear", would have to be found through the conventional forces.

A balance reached through the strengthening of the West's conventional component – supposing it could be feasible, given its cost – would be a solution, ensuring the deterrent function already mentioned.

The deterrence thus attained would be, in this case, **the military solution of the problem of non-war**.

On the other hand, a balance reached through a reduction of the forces, in order to attain a balance of the two sides at the lowest possible level – and this is Vienna's goal – would also be a solution and would ensure a deterrent function of a different kind, because it would be associated with measures aimed at building confidence on both sides.

This could be considered **the political solution of the problem of peace**.

In order to avoid that the reduction of armaments should give rise to suspicions, one should try to make the **threat** – which the military specialist always place at the foundation, both in the definition of the instrument and in the study of strategies – constantly seen in the proper light. Since the

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threat is the resultant of a **potential** and of a sequence of **behaviours**, in order to reduce it one must operate in both spheres.

In the first sphere – that of potential – the reduction offers guarantees only if associated with measures aimed at avoiding possible deceptions.

In the second sphere – that of behaviours – the statements about peace, cooperation and detente have a meaning only if one can create the conditions in which it is possible to control their validity, doing away with all possibilities of doubt, perplexity and suspicion.

From this stems the **fundamental importance of control and of every other measure aimed at building confidence.**

In the Vienna negotiations, the first sphere has – according to the Western vision – its strong points in direct observation and inspections.

Confidence, again according to our idea, is built through the application of a series of "associated measures" (invitation of observers, advance information on military activities, etc.).

Whatever may be said for partisan reasons, the political will cannot be a substitute for control, because the latter is supported by the direct acquisition of factual data, technically determined and with a concrete content, while the former remains a mere statement of intentions, unilaterally expressed, which cannot be quantified in any way.

I am personally convinced that the limitation of arms (...and armed men) will be attained, sooner or later, because this is the unavoidable course of things.

If arms reduction will not be achieved as a consequence of the rational dialectic process mentioned above, it will have to be accepted because of a decisive reality, a compulsory practical, technical and financial scot which is the outcome of two **concurring pressures**: the one exerted by the ever **increasing cost of armaments**, more and more above the means of most international subjects, and that depending on the **progressive decrease of the demographic output**, whose trend, at least in the medium term and as

regards the countries with a higher living standard, gives no cause for delusions.

Clearly these pressures exist in the East no less than in the West, therefore it is easy to draw the logic conclusion that, in a not too faraway future, especially in the small and medium countries, it will be rather difficult to keep the present quantity of military instruments.

It is not a heresy to start thinking about **operational structures very different from the present ones, consisting of elements which I would describe as having a differentiated operational speed, relying in practice on an updated high-capability, highly sophisticated resolute component and on a complementary component of more limited capability and less sophisticated**, less modern but nevertheless important for carrying out the concomitant tasks which continue to coexist with the more decisive ones.

Aren't the "rapid intervention forces", which are mushrooming here and there, a white lie that disguises the need of a reduction, imposed by the force of events more than by the new tasks?

The rationalization of the strategic relations, on the one hand, and the decisive influence of technical and financial factors, on the other, will contribute more and more to the coherent search for the solution of the security problems of our age, in a less emotional way, making use of cool judgement based on calculation as well as on a logical political action, applying

a correct assessment of the limits of the liberty of action vis-à-vis the foreseeable risks and the moral influences as well, making peace the concrete goal of concurring efforts, exerting leverage on the parameters that configure the balances and simultaneously on the factors which, through reliable information, help to increase confidence.

At a glance, this may seem a conception that smells of utopia. The truth is that, clinging to the past as we are, we still cannot understand the **implications of what is new**, which are numerous; and not only those of nuclear origin, nor simply the prospective neo-conventional ones (emerging technologies and star shields).

It is remarkable that in **today's reality the excess of power always translates in a paralysis of action, while improper strategic forms make their appearance, and terrorism is one of their most worrying offshoots.**

What can we do?

I would answer, simply: **don't neglect the conventional forces!**

The balances must be shifted to the conventional sphere, giving new life to the strategic dialectics with a credible and morally acceptable deterrence. In connection with this latter issue, there must be a downward trend, towards a balance at the lowest possible level.

But that does not suffice. I should like to add that it is time to **abandon the concept of security seen from the "threat" point of view and start**

considering it from the "confidence" viewpoint, working to achieve it through the reliability of information.

Only in this way can we get rid of the feeling of fear, which is the anguish of our times, and the psychosis of encirclement which sometimes appears in some international subjects – owing to emphasized past experiences – can be emptied of all contents.

To this end the contribution of the modern technologies is enormous, but not sufficient by itself. It must be complemented with direct vision, the exchange of data and every other initiative useful to create a better atmosphere.

With this I have gone back to one of the crucial points of my discussion, the problem of control, which is not a simple technical fact but the expression of a true philosophic foundation in the development of international relations.

The organic package of verifications, together with the associated measures requested by the West, conforms to this vision.

The West demands them and has its good reasons, as we have seen; the East, instead, accepts them in principle, but with clauses and restrictions which in practice nullify their contents and purposes.

It is only a matter of good will – political will, of course – considering that the times are ripe for setting aside all excessive emphasis on the "secrecy myth" and all fears of compromising the systems' impermeability.

Umberto Cappuzzo

THE M. B. F. R. NEGOTIATIONS

LET'S NOT NEGLECT THE CONVENTIONAL FORCES!

INDUSTRY



AND DEFENCE



Until the First World War, the strength of the armed forces was generally measured by the numbers of men involved. After centuries of validity, this parameter has recently lost much of its significance. Numbers no longer count as much as the men's specific training and the equipment, aeroplanes, helicopters, tanks and missiles at their disposal. Above all, the technological level of the materiel is becoming increasingly important. This is, in fact, a field where an accelerated innovation process can lead to such a high level of sophistication as to make even the latest equipment obsolete. There is a need for great research efforts involving the government departments responsible for both defence and industry.

Ever greater integration is found between industry as supplier and the state as buyer in the field of advanced technological development. This process does not affect only the specific goals of defence, but is nearly always a source of considerable spin-off for civilian uses. An example of this is provided by the microelectronics sector in the United States. Although this field was given a tremendous boost by military projects, 93% of its production is now absorbed by commercial applications.

While this integration between industry and defence is very advanced in the United States, it is much less widespread in Europe, and still less in Italy. There are, in fact, very few examples of

comprehensive, large-scale state intervention to develop sectors of paramount importance to national defence. This is why the recent developments in the United States in the sector of strategic defence have aroused the interest of European industry as a whole. This is a remarkable opportunity to embark on joint research programmes leading to significant forms of co-operation between European and American firms in sunrise sectors.

Another aspect requiring consideration is the size of the national market. The Italian market is about one twentieth the size of the U.S. market, one fifth of the British and one third of the German. While Italian companies supplying military products must therefore satisfy the strictest quality and performance standards, they can only hope for a relatively small market.

Although already a much debated topic, it is worthwhile recalling the need for long-term thinking in budgeting for defence and for making a medium-term allocation of the resources to the sector. It is important to set the priorities for the development and purchasing programmes and lay down strict scheduling constraints. The effectiveness of the now historical promotional laws as regards the industrial sector as a whole has been demonstrated in practically all sectors. It is also known that industry needs an authoritative and institutionally recognized opposite number which is capable of condensing and expressing the requirements of all the forces composing the national defence system.

Let us now turn to the foreign markets. In the last few

Rear view of the Anglo-Italian-German "Tornado" aircraft.



"FH 70" 155 mm towed howitzer.

years, falling oil prices, coupled with an economic trend offering considerable opportunities for recovery in the national economy, has brought about a crisis in the markets for our military products. Our clients are, for the most part, oil producers, and drastic reductions in their incomes have forced them to cut back imports. Moreover, the worsening of political problems, such as the boycotting of so-called "hot areas", has further reduced our export opportunities.

The situation facing the Italian military industry is thus so difficult that there are doubts as to whether to keep the sector going or to disinvest and concentrate on more remunerative productive activities with more secure future prospects. My opinion is that abandoning the military sector would cause irreparable harm to our industry. It would, in fact, mean the following:

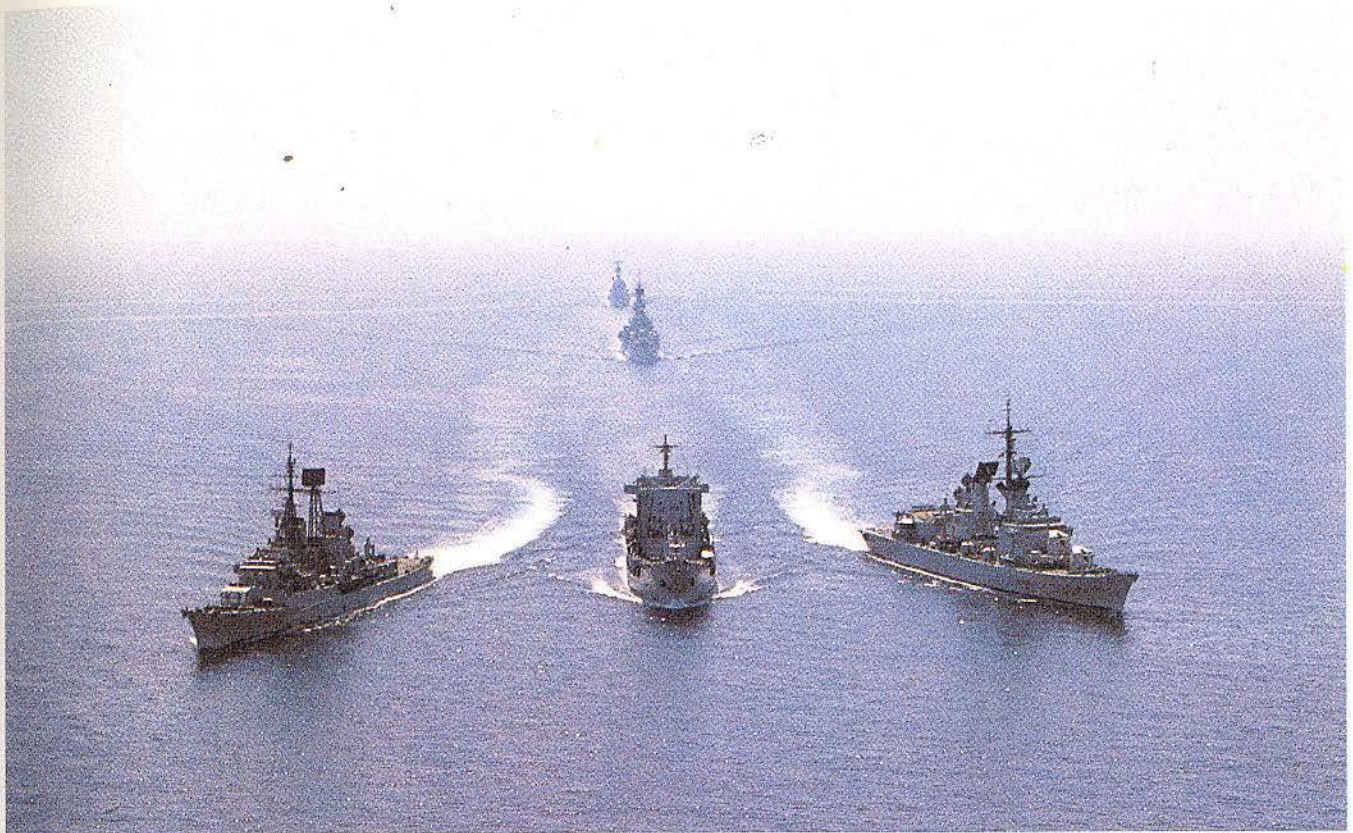
- weakening our military strength by making our defence system totally dependent on foreign suppliers;
- impairing the prospects of the entire industrial system, in that military research is a basic element of the process of scientific and industrial development;
- creating further economic and employment difficulties for our industrial and social system.

Fresh outlets must thus be found for the Italian military industry. Our traditional export markets are in a state of crisis due to present economic trends and to structural factors. They must be replaced and new markets sought in the industrialized countries. However, operating in these new markets is anything but easy. We must be able to rely on a modern and efficient high-tech industrial system, and our military industry still does not, unfortunately, measure up to these requirements.

When Fiat had to face the crisis in the automobile sector,

it had no hesitation in choosing innovation of both processes and products in order to regain competitiveness. Even though this meant massive investment at a time of crisis for the company, it has proved to be the right decision. This experience has much to do with our view that today's crisis in the defence industry must be handled in the same way. Innovation is necessary in productive processes, while sufficient flexibility must be maintained to cope with the changing and diversified demands of this type of market, and to enhance the technology embodied in the finished products.

Innovation is thus the only way to regain competitiveness. Today, however, technological innovation means high investment costs and a decreasing product life span. This is especially true for the defence industry. The complexity of modern defence systems requires both great financial resources and considerable organizational capacity. Moreover, the problem is



Italian naval formation during an exercise in the Mediterranean.

aggravated in Italy by the country's serious productive dispersion.

A start has been made in tackling these problems by the creation of consortiums and extending co-operation among national industries to the maximum. The objective is twofold: to arrive at the domestic exploitation of all favourable trade-offs in the processes of technological innovation, and to present a united front abroad to make the most of any commercial synergism.

International co-operation is an essential condition for our survival and development. The SDI and Eureka projects offer two examples of this necessity and of the analogies existing between civilian and military development programmes. Both sectors have come up against the same problems, and must seek similar solutions in terms of organization and industrial

strategy. In both, product evolution has led to the development of electronics, which is now launching into control systems involving artificial intelligence. At the same time, electronic sensing has been combined with optics to form the new field of optical electronics.

Two types of producer have emerged: producers of complete systems or OEMs and "specialists". The latter are specialized in the production of specific components, the former in planning or producing the finished product, or integrated system. I believe that the market clout of the major industrial groups can now be measured largely in terms of the relationship between these two categories.

This will provide a specific direction for strategic development: the productive context will no longer be one in which everyone does a bit of everything, but a flexible and integrated system linking the producers of components to the major complete system producers. The winning strategy will be the one that allows the

major producers to make increasingly selective investments and to allow production processes to branch out horizontally. This will have the effect of making the satellite producers a responsible and competitive element, and of enabling the "specialist" to enhance quality and innovation through a process of "internal" competition obtained by creating industrial co-operation links with more than one whole system manufacturer. This has been thoroughly tested in the civilian sector, and is certainly valid also for the military.

I therefore believe that this important path must be followed if we are to reorganize our military industry and put it on an overall competitive footing with foreign industry, and to conquer or maintain a front-line position on the leading edge of innovation.

Cesare Romiti



INTRODUCTION TO GEOPOLITICS



Political geography studies human groups and their relations with the territory at a particular historical time. *Geopolitics* introduces the factor of time, the history of human groups, in the context of a wide-ranging view of the general phenomena that link geographical factors to states.

"For the most part, specialists in international relations do not appear to be familiar with the works on the science of geopolitics" (1).

In a previous article (2), we mentioned certain geopolitical theories. We should now like to put forward a highly condensed definition of what we regard as the principal elements to be considered when carrying out a geopolitical analysis of a specific international situation. The subject will therefore be dealt with in purely theoretical terms, and an attempt at its practical application will be kept for a later article.

The most important concern of a state is security, and security is principally a matter of power. Power defines the status of a country in the international system. It influences the national politics, the spheres of interest and the image of the state, not only with regard to other states but also with regard to the population.

If we consider the six elements of power, as they have been defined, for example, by Prof. Hartmann (3), we can see that they depend to a great extent on geography. The six elements are:

- demographic (density of population and numerical trends);
- geographical (climate, position and territorial extension);
- economic (raw materials, resources and production);
- historical, psychological and sociological (historical experience, type of society, etc.);
- organizational/administrative (type of government and its strength);
- military.

The first two require no explanation in geographical terms, but the remaining four are also directly related to geography.

The economic element depends not only on the availability of raw materials but also on the geographical

position of the country. This can facilitate or hinder commerce, communications, energy supply and so on.

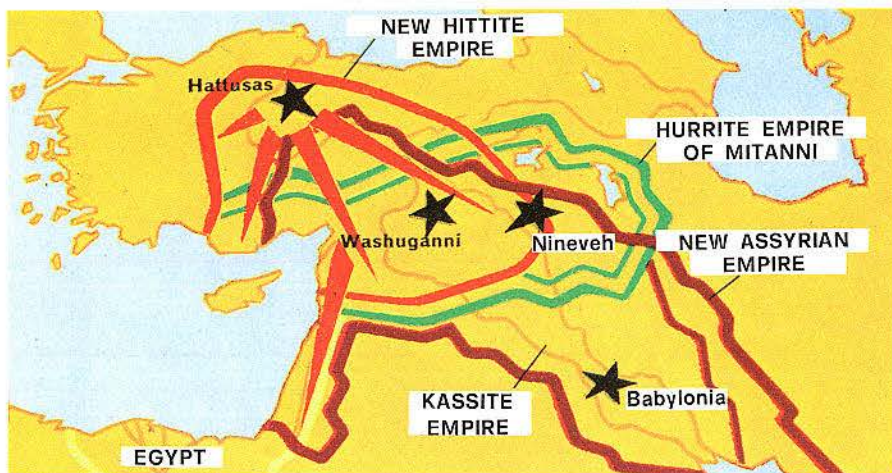
The historical, psychological and sociological element is closely linked to historical experience. This, in turn, is linked to the position, shape and size of the territory with regard to neighbouring countries.

The same can be said of the organizational/administrative element. It is a well-known fact that, in the course of history, the continental powers have tended towards autocracy, while the maritime powers have found it easier to develop a form of democratic government (4). Sparta and Athens are an example of this. Rome was a democratic republic for as long as it was a maritime power. When it changed from being a maritime power to being principally a land power, it became an autocracy.

The military element is also linked to geography, not only from the strategic point of view, which is important, but also



The Assyrian and Babylonian Empires around the 2nd millenium B.C. The flourishing economy of the Babylonians made it unnecessary to conquer other territories in order to increase the power of the country.



The Assyrian and Babilonian Empires at the beginning of the 1st millenium B.C. The Assyrian lived in a country open to invasion and, unlike the Babylonians, adopted an expansionist policy to defend themselves from their neighbours.

because the position, size and characteristics of the territory are those that have, over the centuries, moulded the fighting qualities of the population.

An example that comes to mind is that regarding the difference between the military capacity of the Assyrians and that of the Babylonians. The latter lived in a flattish and quite fertile land whose main resources were agriculture and commerce. The economy was flourishing and there was thus no need to conquer other lands in order to increase the power of the country. This geographical situation had such an influence on the Babylonians that, for hundreds of years, they felt no need of a central government.

The Assyrians lived in a territory where the rivers were of no use for agriculture and the frontiers could easily be penetrated. The only way that the Assyrians could defend themselves was by attacking their neighbours, by trying to conquer fertile lands and thus increase their power.

As Fairgrieve wrote, "fighting was bred into the Assyrians", and a central government was much more suited to a warrior nation than to a trading people.

In this way we have, albeit indirectly, given a generalized definition of geography or, to be more precise, of political geography.

Geography is the study of man in his relationship to the stage that is our land (5).

It does not only involve drawing topographical maps of the earth's surface, but also the analysis and interpretation of the interrelations between man and space. It is the science of the living globe, as Ritter has pointed out. In this sense, geography constantly changes as the interrelations between man and space and their interpretation are constantly undergoing change. However, if we wish to glean from geography certain elements to help us in the study of international relations, we must

understand that it is not so much the objective factors themselves that count as the idea that man forms of them.

Since the power of a state is not only an objective measure but also the image that other states and the state in question have formed of it, geography becomes a subjective element when considered as a factor of power. The importance of this element with regard to the actions of the state depends on the idea that we have formed of it.

This is what we consider to be the field of interest of geopolitics: the study of how man perceives geography or, in other words, the study of the image that man forms of geography.

The image that we have of geography is conditioned by such factors as technological progress, means of communication, cultural past and so on.

The Rocky Mountains, for example, were considered an almost insuperable barrier when the only means of communication were horse-drawn wagons. They were less of a problem after the railways were built, and now that the aeroplane can fly over them they are no longer a barrier at all.

In the first case, the idea that a New Yorker had of California was that of an extremely distant territory which could only be reached with great difficulty and danger. It was much easier and safer for him to sail to London than to travel overland to California.

This does not mean that the distances have changed, but it does mean that our idea of those distances has changed because the means of communication have changed.

In other words, the image of geography changes with the passing of time.

Time is one of the factors which distinguish geopolitics from political geography.

Political geography studies human groups and their relations with the territory in

a particular historical moment; geopolitics introduces the time factor, the history of these groups.

While political geography is concerned with analysis, geopolitics is synthesis: a broad view in time and space of the general phenomena that link the perception of geographical factors to states.

If, for example, we observe the Egyptian civilisation from the point of view of political geography, we note that its development was the consequence of certain specific geographical conditions: the excellent channel of communications offered by the Nile; the very fertile land along its banks; and the fact that the prevailing winds blow from north to south, thus making navigation possible in both directions: with the current to the north and by sail to the south. We can consider what these geographical conditions meant for the Egyptian of three thousand years ago, the environment he lived in and so on.

We can do the same for the Sumerian civilisation along the Tigris and the Euphrates or, at a later date, for the Roman Empire: its birth in the Mediterranean, the central position of the Italian peninsula, the commercial opportunities of Rome with all of the coastal states, the great number of safe anchorages due to the features of the coast and so on.

This is political geography.

The picture changes, however, when we take all of these analyses together to obtain an overall, synthetic view of such factors as: how the ancient civilisations were formed around the excellent communications systems that the rivers then offered; how, in time, the technological progress of navigation extended this system of communications to a limited sea such as the Mediterranean, how communications influenced civilisation; and how continual progress made it possible to switch the principal

lines of communication from the Mediterranean to the Atlantic. If we consider the sequence of these events from a general, synthetic, historical point of view, then we are thinking in geopolitical terms (6).

We can thus see how not only the geographical "reality" but also, perhaps above all, its "perception" have led man to follow certain lines of force that have moulded the socio-political progress of humanity. We could even dare to draw these lines of force on a map, as we normally do in physics.

Let us consider, for example, the Near East, the area including Syria, Israel, Lebanon and the Sinai peninsula.

At the dawn of civilisation, the lines of force of the cultural, economic and military expansion of the Sumerian civilisation spread from the valley of the Tigris and the Euphrates to cross the Fertile

Crescent and meet with the Egyptian lines stemming from the Nile Valley. The Near East became an area of conflict, a battle-field where these two forces clashed. The power that succeeded in dominating the area would also dominate the civilised world of ancient times.

The area was in a state of continual upheaval except when an empire – the Persian, Roman, Arabian, Turkish, English or French – was in a position to control both of its extremities: the Fertile Crescent and Egypt.

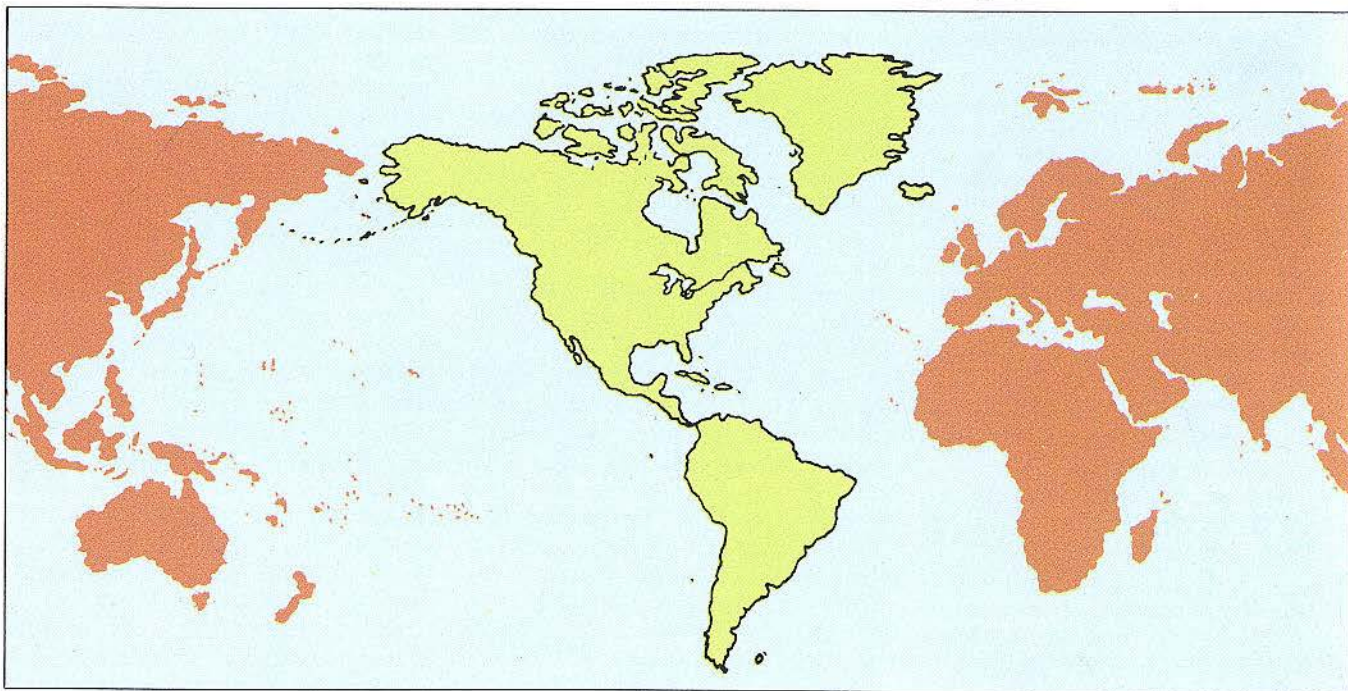
A geopolitical explanation of these events could be as follows.

The Near East is at the point where three continents meet: Europe, Asia and Africa (7). It is a bridge where the lines of force of three different cultures will clash every time that one of them, or all three together, try to expand outside their own borders.

the land masses determines proximity to the centre of power, to the areas of conflict, and establishes the lines of communications. Position with regard to one's immediate neighbours defines the conditions relative to potential enemies, thus determining the basic problem of national security" (8).

The image that a state has of its position has a remarkable influence on its behaviour in the international system. A state may feel "surrounded" because of its position, even if there is no intention on the part of its neighbours to surround it. This does not mean that there is a geographical determinism, as Ratzel would have us believe, between position and behaviour.

Ratzel (9) was the first to realise the importance of position (and of space, as we shall see later), but he considered it an objective geographical element and not as



The western hemisphere surrounded, according to the theory of the American specialist Spykman, by the land masses formed by the European, Asian and African continents.

The Near East became a melting-pot of races, cultures, religions and political forces because of its particular geographical position.

Position is an extremely important element in geopolitics. "Position with regard to the equator, to the oceans and to

the subjective image that we have of it.

"Given that its position is unchangeable, a certain area always transmits the same impulses to states and nations, just as a stream enters a turbulent stretch of its course or returns to a calm and even



flow always at the same point" (10).

These impulses are not, in fact, transmitted by the area but by the people living there. And the image that the people have of the territory they inhabit changes in time, thus changing those impulses Ratzel spoke of as being unchangeable.

All the geographical elements related to the position of a country are objective and static and certainly of great importance. By themselves, however, they cannot give us an idea of the influence that position has on the political behaviour of a particular people.

In geopolitical terms, consideration of the position of a country should not be limited to physical and geographical factors, but should also encompass relations with neighbouring countries, the history of the same and the influence on the mentality of the peoples of the shape of the borders, the commercial and communicational potential and the advantages

and disadvantages for defence.

If we observe the position of a country from this point of view, we can see the importance that it has always had for the relations of that country with others.

The Italian peninsula has been invaded countless times over the centuries because of its particular position.

The Italian culture of the Renaissance is the only great culture to have been born and developed in a country of feeble political and military power. The reason why this great culture was able to develop while foreign armies were marching over the whole length and breadth of the peninsula was the fact that Italy was at the centre of the civilised world of the time. Its position was such that all the cultural lines of force converged upon it at the end of the Middle Ages.

The position of Great Britain was of fundamental importance in providing the conditions for the formation of its vast empire. However, it

Admiral Nelson giving the order to send his famous signal before the Battle of Trafalgar. The British victory marked the end of Napoleon's dream of turning France into a great maritime power. From her insular position, Great Britain obtained control of the seas and was thus able to continue her world policy of military and commercial expansion.

was the way in which this position was perceived in the minds of the British people that made possible the development of the moral forces necessary to acquire the physical strength indispensable for conquest.

Let us take another island, Sicily, as an example. At one time, it lay at the centre of the world, between east and west, north and south, Greeks and Phoenicians, Romans and Carthaginians, Arabs and Christians, Spaniards and Turks. However, the difficulty presented by its position, the feeling of insecurity caused by numerous invasions, prevented the Sicilians from constructing

a centralized state, a political power.

In the same period, Great Britain occupied a peripheral position. As Fairgrieve says, from Great Britain one could go nowhere.

The many invasions of the British Isles were principally due to peoples fleeing from the continent in search of a country where they could live in peace, rather than to conquering peoples bent on occupying a strategic position from which they could dominate a vaster area.

When a central government was formed, the sense of security provided by its insular position (and later by the British Navy) created a fertile site for the planting of institutions, society and culture. Trade was the principal source of wealth for this seafaring people, and with trade came the desire for conquest. It is not, in fact, trade that follows the flag, as is commonly claimed, but the flag that follows trade. It was not, however, only the desire to obtain trading ports, raw materials or markets that led to the conquering of an empire; above all, it was the desire for space.

Space is another important concept in geopolitics. Once again, it was Ratzel who first drew attention to space (Raum). The concept of "Raum" is anything but simple. Raum is space plus time; it is a three-dimensional concept that regards space as a field of historical forces characterised by pressure and direction: the pressure of political, social and cultural expansion and the direction into which they are channelled by natural and psychological factors.

"We can classify our empirical knowledge in two ways: either according to concepts or according to the time and space in which they [the concepts] are actually present.

Classification of perceptions according to concepts is logical classification;

classification according to time and space is physical classification.

The first gives us a system of nature... the second a geographical description of nature" (11).

Through the concept of Raum, we try to obtain a "geographical description of nature" in the reality of the present-day world.

Ratzel drew a parallel between states and living organisms, a simile that he considered useful for the study of states and their development. He explained that organisms need space to grow and develop and that the struggle for life is a struggle for space. The species that survive are those that have the opportunity and the capacity to extend their living space. The defeated are condemned to seeing their space continually eaten away.

However, he never carried this simile to the extreme, to the claim that the state is a living organism. It was Kjellen and the school of Haushofer that took as their premise the idea of the state as a living organism, and drew the conclusion that the state must look for its own living space (Lebensraum) in order to survive.

I have absolutely no interest in discussing the concept of Lebensraum and no intention of doing so; but I do believe that the concept of space and time has great importance for the behaviour of a state in the international system.

The geopolitical regions, which will not be discussed in this article, should be selected according to the concept of Raum. I shall merely mention the fact that a geopolitical region is defined as the field where the forces of history, culture and "movement" have interacted in such a way as to give it its own peculiar character.

The actions and political behaviour of a people depend on how that people perceives

its spatio-temporal environment. This does not mean that there are peoples with the desire to conquer space (Raumsinn), as Kjeller has claimed, but that space and the human beings inhabiting it have a mutual influence on each other.

It is this reciprocal relationship that counts, and not the deterministic explanation of it.

This relationship between man and Raum can help us to explain the logic of the relations between states, at least as regards certain areas which have, to varying degrees, exerted social and cultural influence over far greater neighbouring areas. These influences have shaped the particular historical development of those regions.

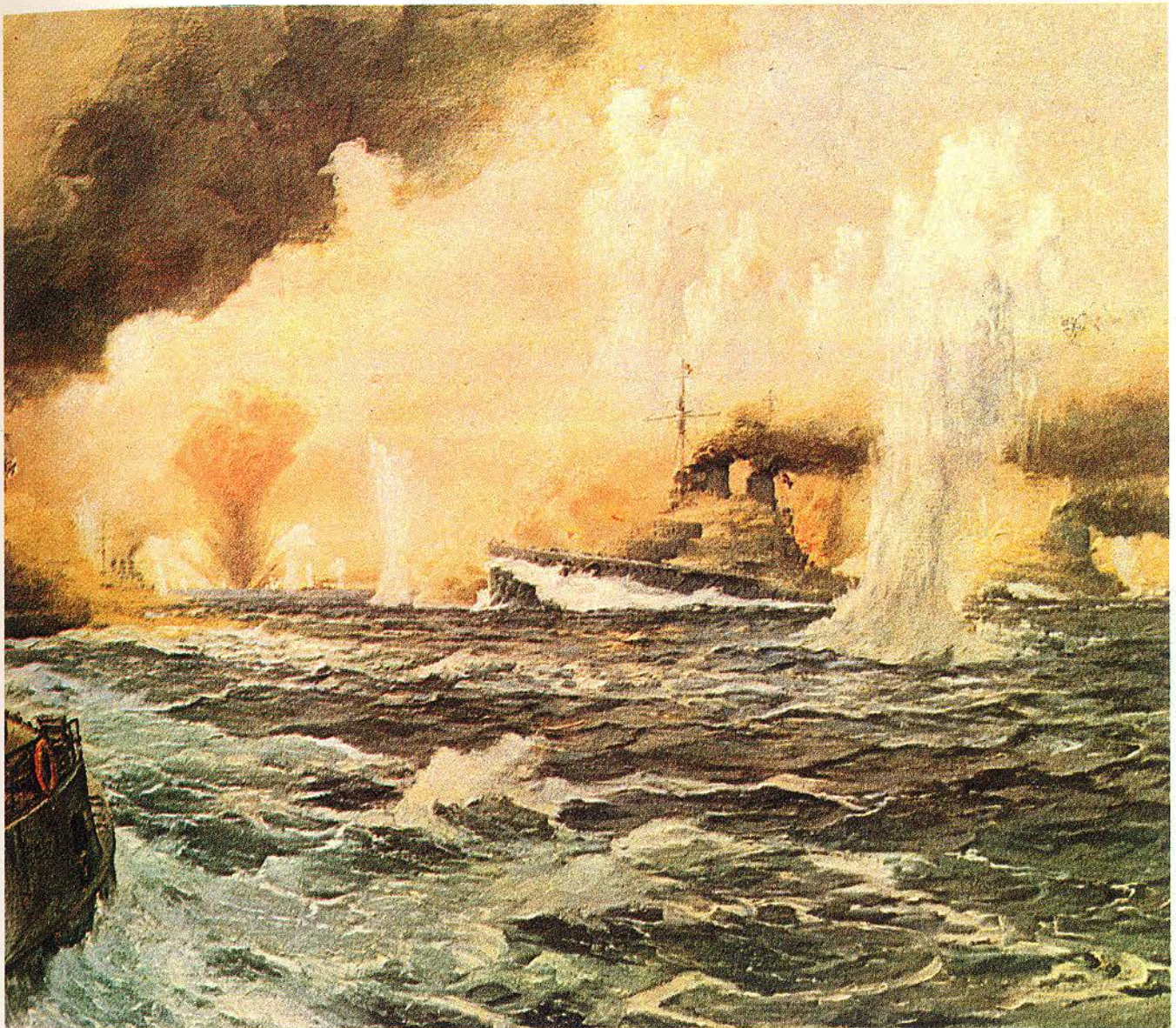
The "pole" from which these forces spread out is an entity defined in space and time, and the clash between two or more fields of differing forces comes about where these forces meet in areas that are common to both sides, as we have seen in the Near East.

The areas where clashes occur are the "nodes" where different forces, stemming from "polar" regions, clash in what may become a struggle to the death.

In every region, these struggles create a common feeling of the need for security, for social and cultural amalgamation and, in time, a Raum, i.e. a concept of spatio-temporal relations on which the vital structure of that region, its "model of life", rests.

Another factor of importance in geopolitics is movement. By movement we mean not only the possibility of exchanges of goods and of persons, but also the exchange of ideas and cultures and the possibility of projecting power far from its point of origin.

If a geopolitical region is built up around a social and cultural nucleus emanating from a "polar area", some form of communication, i.e. of free movement, is necessary.



Freedom of movement can influence the cultural, social and political behaviour of man. One important point must be stressed immediately: movement is principally influenced by the relationship between sea and land.

As the sea is the safest and easiest channel of communications, it is also therefore the natural physical and cultural link between peoples.

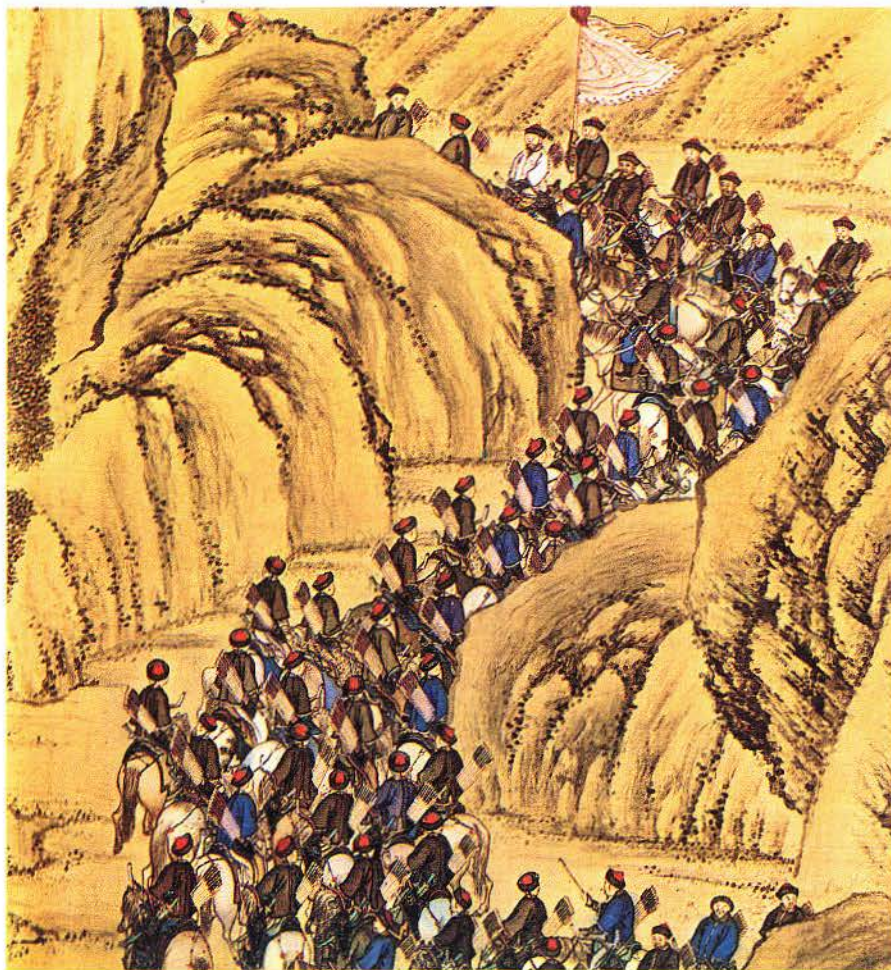
The concept of distance is closely related to that of movement. The relation linking these two concepts, movement and distance, is all too often distorted by old commonplaces. For example, the claim is still considered valid today

that power is inversely proportional to distance, meaning that the amount of power that can be projected is inversely proportional to the distance over which it must be projected. This may hold true for military power over short distances, in the tactical field, but is not at all true on the global scale.

First of all, power is not only represented by the military element. However, even taking into account this aspect alone, we must agree that this old cliché has now been modified by technological progress.

For example, during the Vietnam war it was easier for the United States to supply its troops in South Vietnam by sea

The Battle of Jutland marked the end of the German High Seas Fleet as a force capable of breaking through the blockade imposed by her adversary. The political and military design of expanding the Germanic "Raum" came to a halt with the impossibility of overcoming the "node" of the North Sea under British control.



Chinese Emperor with escort. The hordes of Mongol origin were always attracted by the cultivated lands surrounding the steppe. In order to stem the tide of barbarian invasions, the Chinese built the famous wall to reinforce the natural obstacles.

the greatest revolutions of our day could turn out to be the proposed permanent international TV link. In this case, the movement of ideas, culture and life-styles would no longer be hampered and, in time, people's perception of geography could be drastically changed.

Antonio Flamigni

than for China to supply North Vietnam by land. In fact, North Vietnam was mainly supplied by sea by the Soviet Union.

This freedom of logistic movement offered by the sea is one of the principal characteristics of the relationship between sea and land.

This does not mean that land movement is not important. In the course of history we have been able to observe vast movements overland.

For example, when a run of good years provided excellent pasture in Central Asia and so led to the growth of numerous herds of horses, the Mongols were able to spread out from a central position over easily crossed terrain towards the east, west and south.

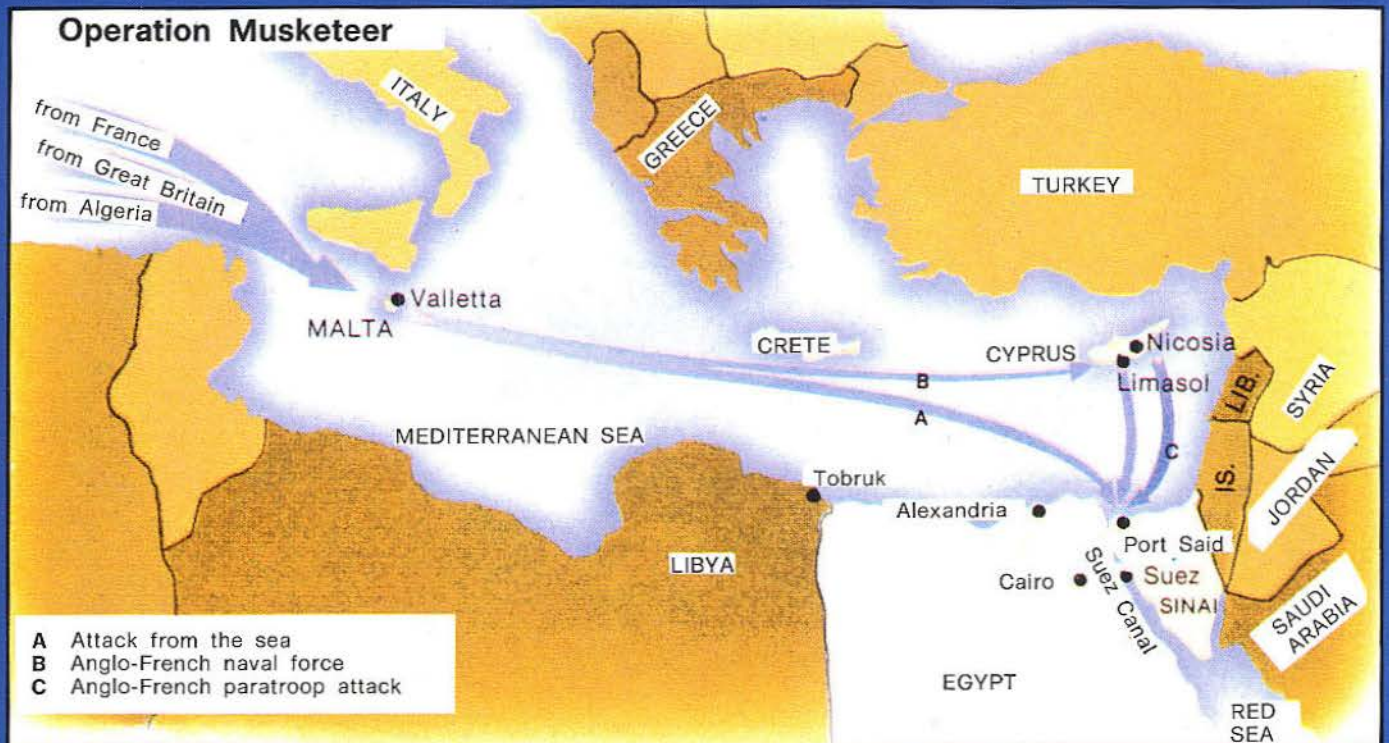
Certain geographical factors have had considerable

influence on movement. The deserts are the areas of greatest difficulty of movement, and it is normally for this reason that geopolitical regions are separated by them. The great mountain chains are second only to the deserts, but rivers have always been one of the easiest and most natural channels of communication and it is only recently that they have become, by convention, borders.

Technological progress has, naturally, modified the significance of impediment, but not to such an extent that it need no longer be considered. The aeroplane has modified the logistic aspect of what we call movement, albeit not completely, and may, in time, be able to modify the cultural and social aspects as well. However, there still exist great land masses whose inhabitants are isolated by the very size of their territories. One of

Notes

- 1) Spoot: "Man, Milieu, Relationship", CIS Princeton Univ., 1956, p. 37.
- 2) Rivista Militare, Quaderno 4-1983. "Alcune Teorie Geopolitiche".
- 3) Hartmann: "Relation of Nations"
- 4) The only exception that comes to mind is Switzerland. By continental powers we do not mean only those with no access to the sea, but also those whose power is principally land-based: for example, those in which the merchant navy has never been of great importance.
- 5) Cohen: "Naval War College Review", Dec. 1957.
- 6) We owe this example to the geopolitical publications of the Army War School.
- 7) It may be observed that Europe does not physically touch the Middle East. The significance of contact is not purely geographical, but also cultural, historical and economic.
- 8) Spykmann: "The geography of peace", p. 5.
- 9) Ratzel: "Politische Geographie".
- 10) Op. cit., p. 180.
- 11) I. Kant: "Introduction to Geography".



THE PRINCIPLES OF WAR IN MODERN CONFLICTS



The knowledge of the principles of war is indispensable, but by itself it does not make an officer a good commander of troops.

As a matter of fact, it does not suffice to have a perfect notion of the relations between strength, space and time, in order to obtain the best results from the command action on the battlefield. One must also have the intuition of the creative genius, which enables him to implement the decision by a prompt and rational coordination of the above elements and a precise and weighed deduction deriving from their evaluation.

Most modern armies acknowledge the validity of the principles of war, and introduce them officially in their doctrine and regulations. There is no consensus over these principles:

in fact, the Soviet Union, China and Great Britain acknowledge ten of them, the United States, Germany and Spain nine, Italy and Switzerland eight, France three. These different views on the validity of the principles have been illustrated in "Rivista Militare" No. 3/84 (Italian Edition).

More particularly, in the 6/84 issue, only four principles have been proposed: will/initiative, concentration of efforts, liberty of action, economy of forces.

In practice the innovation is anything but insignificant, because it concerns the formation of the commanders, with appropriate stress on the relation between liberty of action, initiative and responsibility. While the liberty of action is born outside the individual and due to external

contingencies, the initiative is something within, an ingrained quality of the commander. It must be constantly trained in the light of the concept of responsibility, in order to be developed within the boundaries of the liberty of action granted to each individual.

Our regulations and operational orders always imply the value of initiative, which, in order to be correct, must work within the limits established by the liberty of action. Outside these limits it can be harmful, because it hinders the normal course of activities.

In order to start an in-depth discussion on the principles of war, let us consider some particular aspects of the conflicts which followed the second World War.



THE "MUSKETEER" OPERATION OF 1956

(illustrated at left)

This operation is an example of lack of "concentration of efforts" between politicians and military, because the victory on the battlefield was followed by a humiliating political defeat, inflicted by international public opinion, which caused a sudden withdrawal while the operation was still in progress.

Operational «Musketeer» was the name of the Anglo-French invasion of Suez in 1956. Albeit with numerous changes in the planning, it began with the English airdrop at Gamil and the French operations on the bridges of Rawsa and Port Fuad; the latter was a model airborne operation. These actions were followed by the invasion from the sea, with the landing at Port Said and the final advance, which was stopped for political reasons. Despite the military success, the operation failed because of international censure, especially from the United States. The French military élite, deeply frustrated, found itself in the front ranks in May 1958, during the events that led to the fall of the Fourth Republic.

THE PRINCIPLES OF WAR in the United States, the Soviet Union and Italy

		ITALY	
USA 9	USSR 10	CIRC. 700 5	CIRC. 900 8
Objective	Annihilation	Manoeuvre	Capability of command and execution
Simplicity	Arms combination	Mass	Freedom of decision
Command unity	Offensive (or activism)	Economy of forces	Mobility
Offensive	Manoeuvre	Surprise	Fire power
Manoeuvre	Concentration of efforts	Security	Balanced configuration of the instrument
Mass	Economy of forces		Will to prevail
Economy of forces	Surprise and deceit		Execution capability
Surprise	Adequate reserves (persistence)		Logistic potential
Security	Morale		
	Advance and consolidation		



THE KOREAN WAR

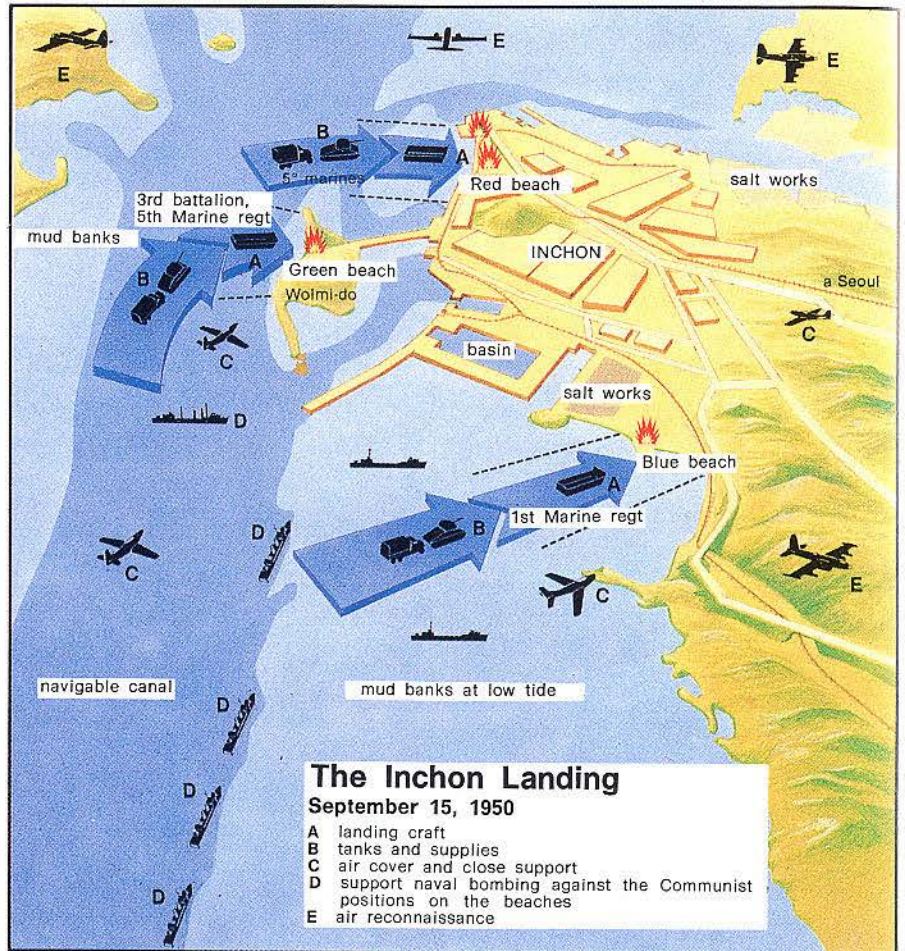
The 1950 invasion of South Korea by the Communists of North Korea soon became an international conflict, which involved the United States – with its allies – and China. The war was cause for wide contrasts between the political and military American leaders, because President Truman wanted to hold the conflict within well defined boundaries, without entering the Chinese territory, while General Mac Arthur wanted to employ all resources, not excluding the nuclear bomb, in order to attain a complete victory in a global war against Communism.

Among the principles of war that were applied in the Korean conflict, there are some aspects, regarding the liberty of action and the economy of forces, that deserve particular attention.

For the military commander, liberty of action means autonomous decisional capability, which enables him to rapidly adjust to contingent situations and unexpected needs, without his being excessively influenced by the previous planning. Evidently this liberty ends where the political demands begin, and this limitation has been clearly shown in the order issued by President Truman, who wanted to keep the advance within the Korean territory, without invading China and consequently widening the conflict, as General Mac Arthur wished.

As regards the economy of forces, it must be emphasized that in Korea great Chinese masses, poorly armed and equipped, confronted a smaller number of men equipped with modern weapons and sophisticated technology.

In the first phase of the conflict the North Korean forces, better armed and equipped, appeared clearly superior to the South Korean ones. Subsequently, the U.N. Forces, provided with even more modern weapons, got the upper hand; nevertheless they were in their turn overwhelmed by the great Chinese masses. In the last phase of the conflict, after alternate events, "quality" won over "quantity", thanks to the considerable manoeuvring and fire superiority, which forced the Chinese masses to withdraw. The principle of the economy of forces, through which a maximum result is obtained with a minimum waste of energy, found in the manoeuvring capability and in the highly sophisticated equipment the indispensable prerequisites for the attainment of success.

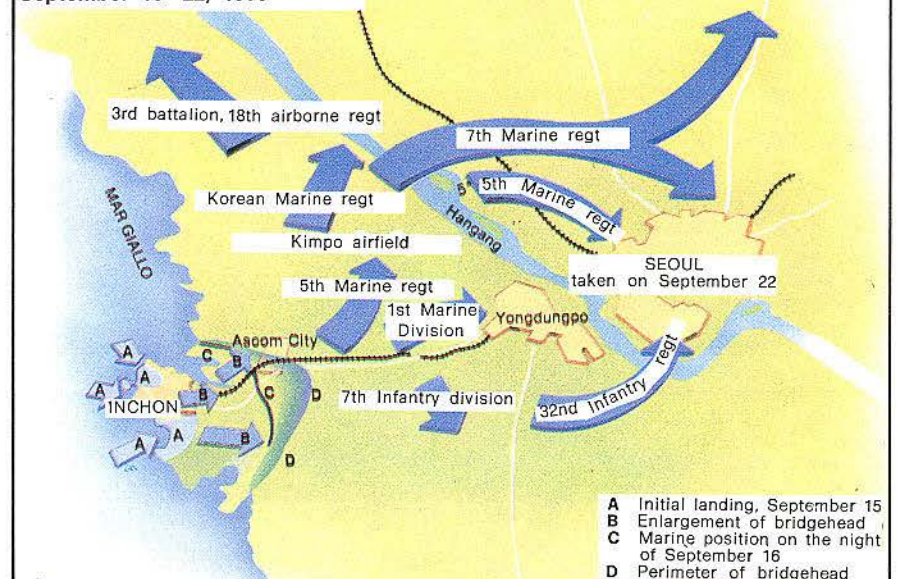


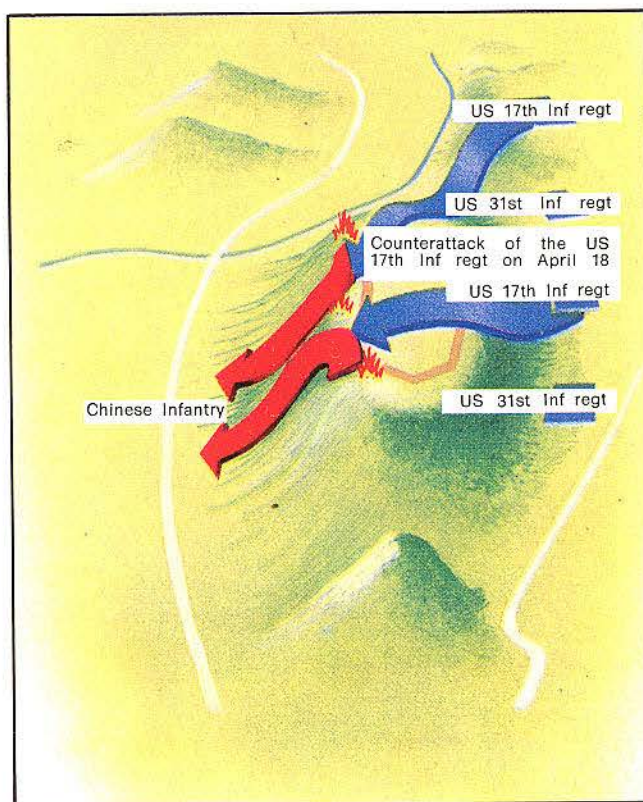
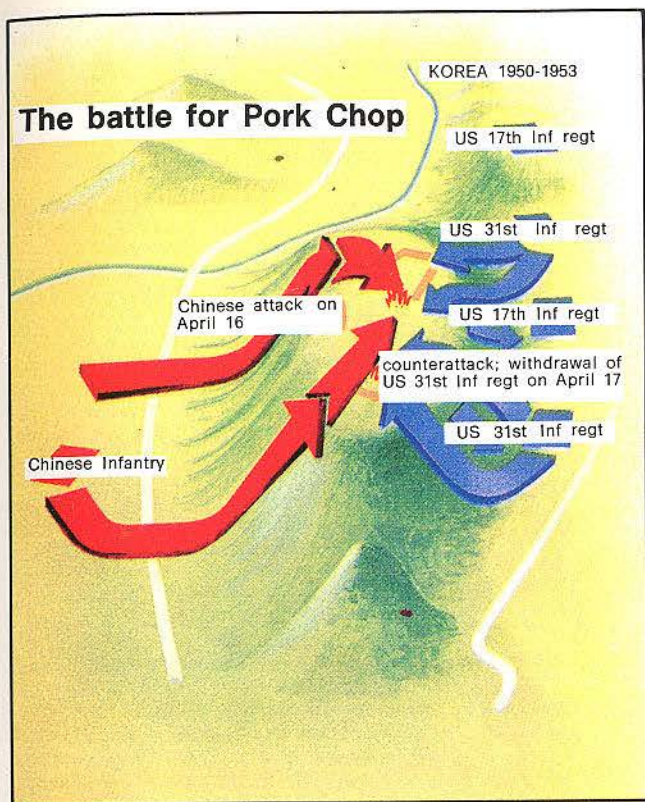
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During the 1953 negotiations, the battles on the hills were a test of wills. Pork Chop, among the hills held by the Communists, assumed a particular political importance, much greater than its military significance. On the night of April 16, the hill was held by two platoons of the 21st Regiment of the U.S. 7th Infantry Division. Although the night was clear and starry, the Chinese reached the American positions quickly and by surprise.

From Inchon to Seoul

September 15 - 22, 1950



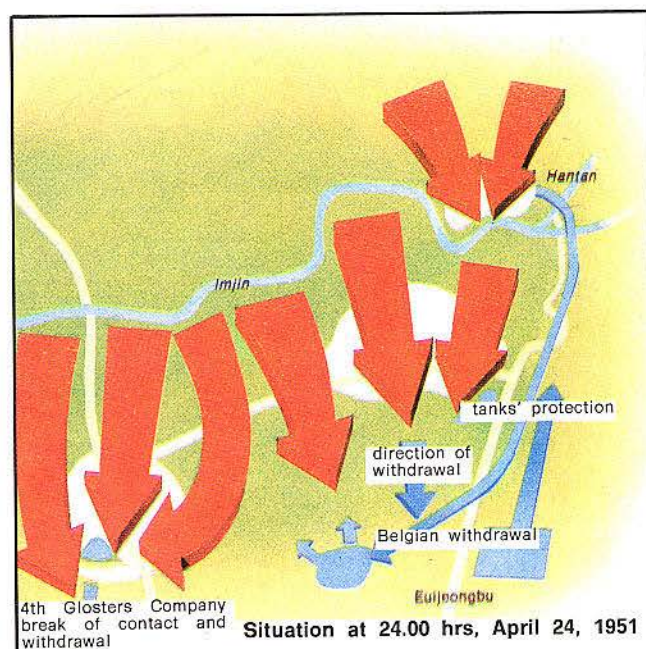
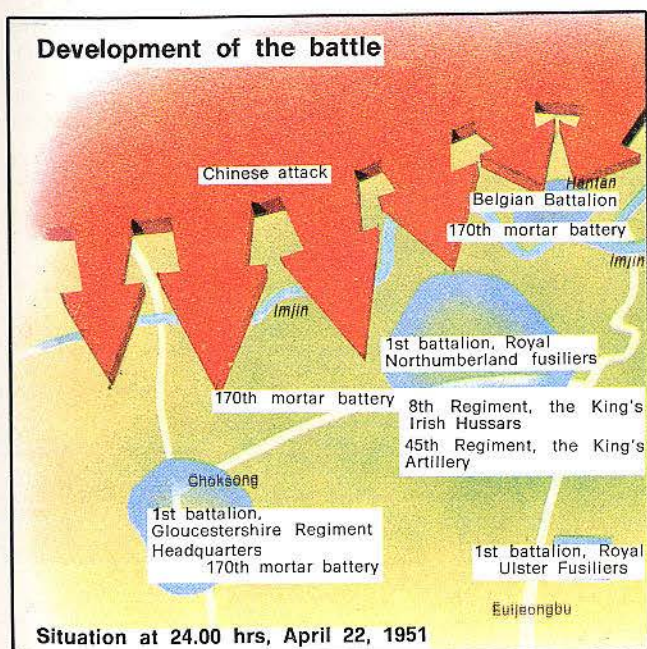


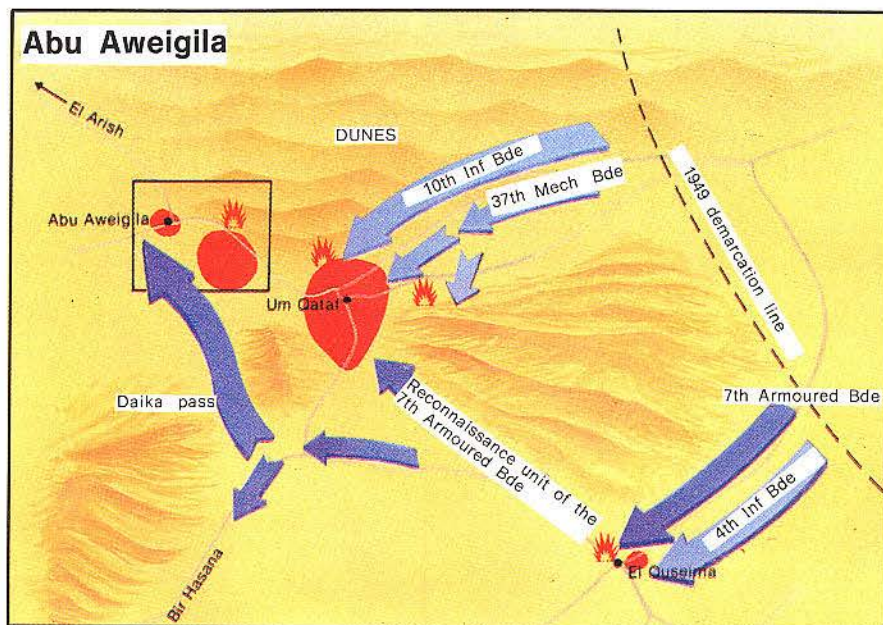
When the alarm was raised, the defences had already been overwhelmed. At 2.00 a.m. Pork Chop had fallen. Unsuccessful attempts to reconquer the hill were made on April 17. It was decided to make a second attack with two companies of the U.S. 17th Infantry Regiment, which reconquered Pork Chop at 2.30 a.m.

Below.

The massive Chinese offensive of April 1951 was faced also by the 1st Battalion of the Gloucestershire Regiment

(the "Glosters") which was completely surrounded. To break the encirclement, each company acted on its own: three companies were destroyed, the fourth succeeded and 39 men reached the U.N. positions, passing necessarily under the Americans' fire. The Chinese offensive in Korea, launched with 30 Divisions and more than 40 in reserve, was stopped thanks to the superior air and land fire-power of the Americans. It was a victory of the modern war-technology against the "mass" of the Chinese Divisions.





THE ISRAELI ATTACK IN THE SINAI

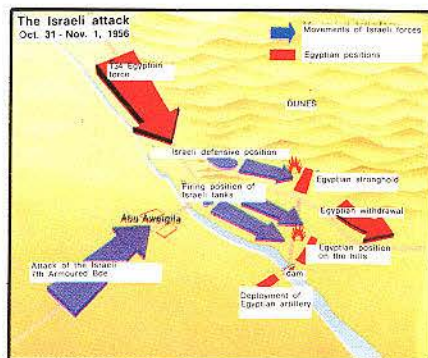
In 1956 Israel launched a swift attack against Egypt, converging its armoured columns on the Suez Canal. This attack proved the decisive importance of tanks on the battlefield.

The Israeli army consisted of reservists plus a small number of recruits under training, and had been organized for rapid mobilization. The integral application of the "will/initiative" principle was at the foundation of the Israeli success, together with a very flexible operational plan, based on surprise and initiative.

The main attack was delivered against the Egyptian concentration of Abu Aweigila, a vital crossroads, with a powerful force. The 37th Mechanized Brigade and the 10th Infantry Brigade were to converge on Abu Aweigila. The 4th Infantry Brigade was supposed to conquer El Quseima, in order to enable the 7th Armoured Brigade to advance towards the same objective. The frontal attack to Abu Aweigila did not succeed, while the commander of the 7th Brigade disobeyed his orders conferring greater importance to the action of his unit. The commander of the 10th Brigade was dismissed for excessive caution, while the commander of the 37th Brigade was killed during a daring frontal attack in broad daylight.

The position of Abu Aweigila resisted until the Egyptian Command ordered to withdraw, on November 1, 1956. The order was due more to the Anglo-French landing at Suez than to the Israeli attacks.

In the operations of 1967 in the Sinai, the Egyptian Major Units adopted Soviet defensive procedures. The Israeli units employed "Centurion" tanks, by far superior to all Egyptian armour, and succeeded – although suffering heavy losses – in opening several breaches, which made penetration possible at strategic level.



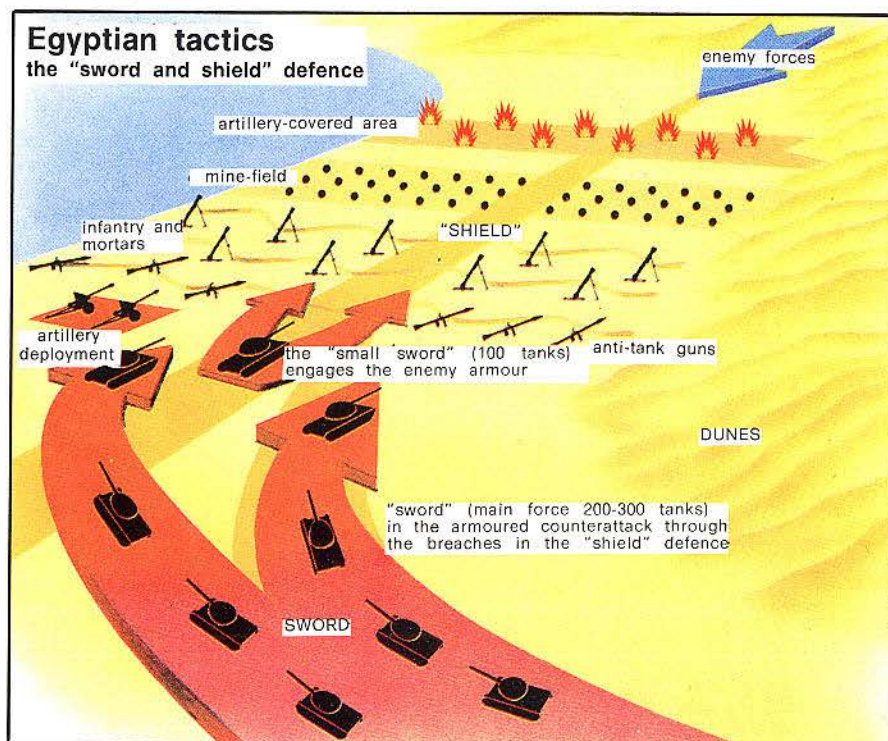
JUNE 1967 IN THE SINAI

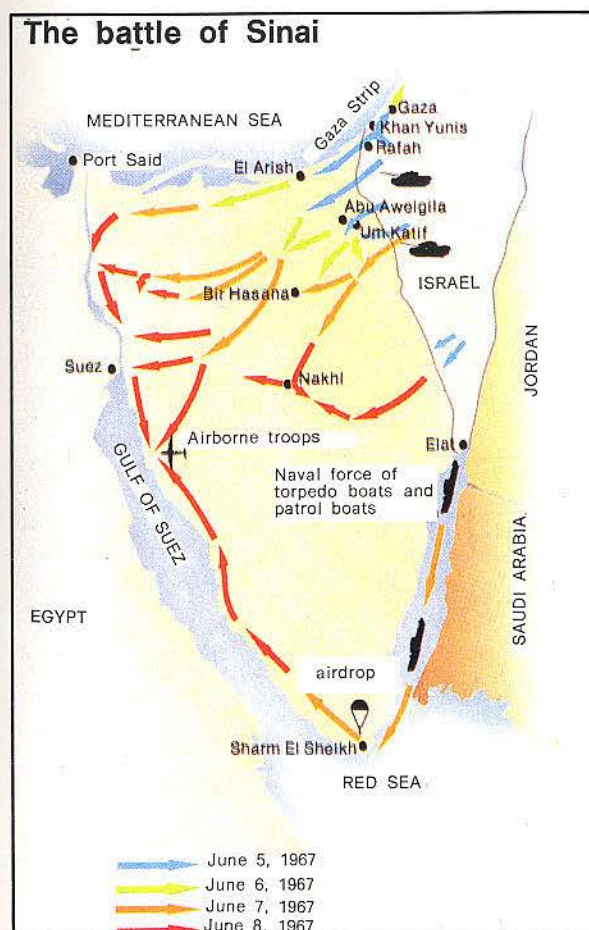
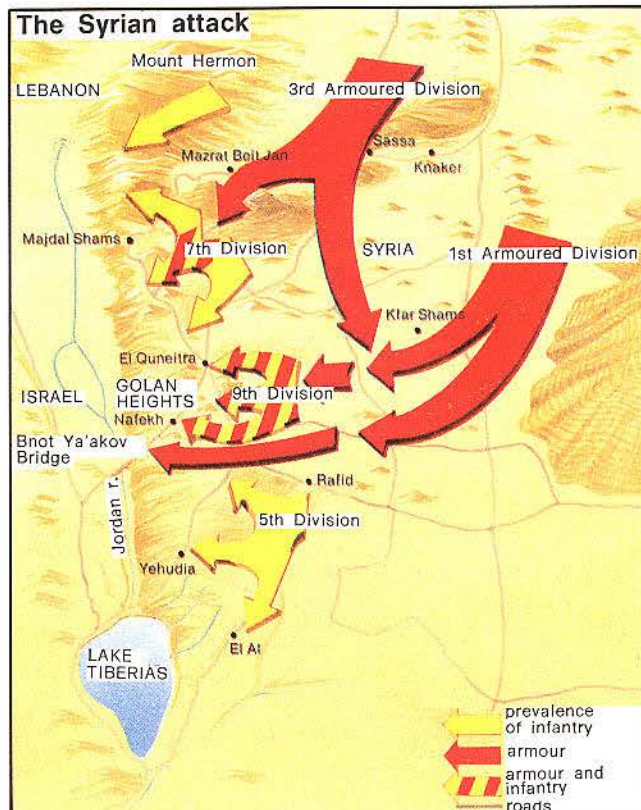
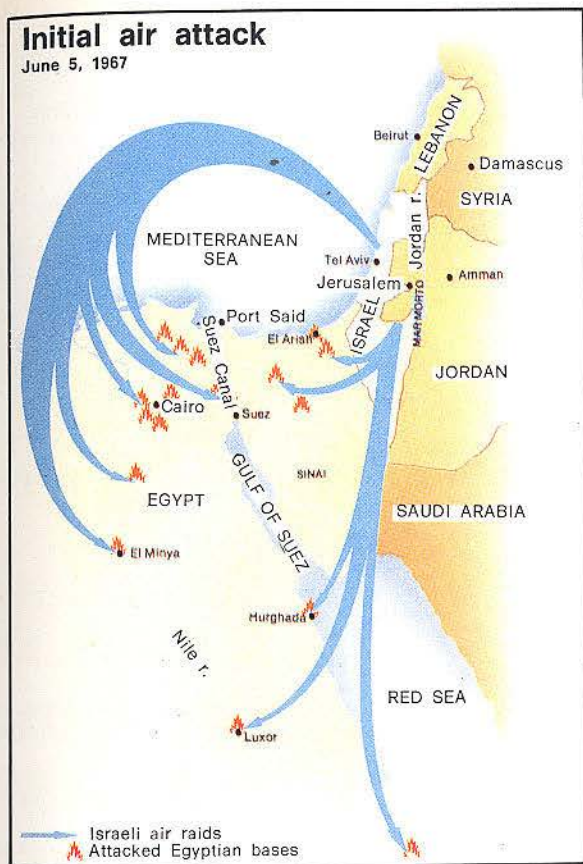
The aim of the Israeli attack of 1956 was that of conducting an enveloping battle, without having to carry out a frontal attack against the main Egyptian defensive positions. In 1967 the problems were different: Israel wanted to employ the armoured units to open breaches through the Egyptian strongholds and penetrate in depth as far as the enemy lines of communication.

The Israelis had the main advantages: air superiority and the "Centurion" tank, a vehicle much superior to the ones available to the Egyptians.

One Israeli weak point was the scarce coordination between the armoured units and the remaining forces. The armoured units often raced ahead, leaving the infantry and the artillery far behind, unable to overcome the resistance that was soon reorganized after the tanks' passage. A major factor of the Israeli victory was the massive air support, without which the land units could not have reached the Suez Canal.

The Egyptians opposed a fierce defence, showing that they could fight with great vigour.





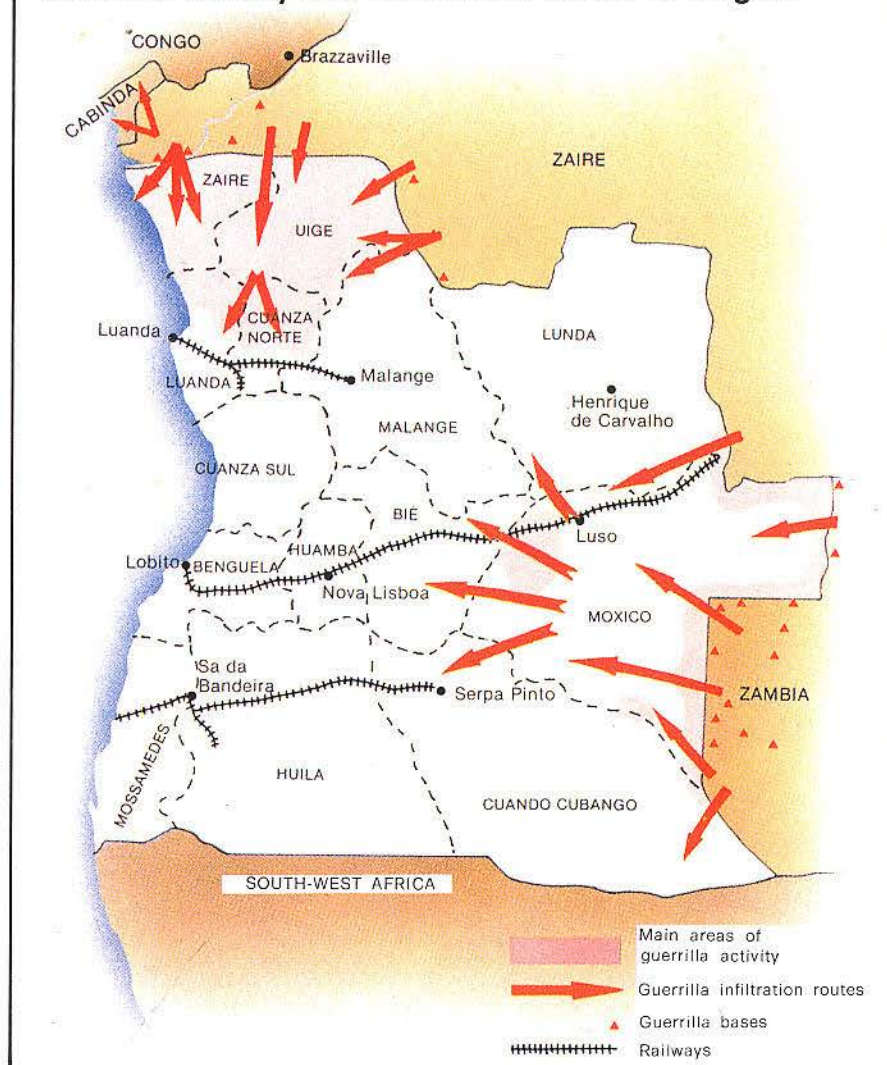
THE BATTLE ON THE GOLAN HEIGHTS IN 1973

The Syrians had foreseen an attack that would have cleared the heights in two or three days. Unlike 1967, when most of the army had been kept on rear positions, they drew up almost all of their forces; on a front of 50 km, they employed in fact 2 armoured Divisions, 3 Infantry Divisions and several Brigades, with a total of approximately 1200 tanks. The attack was to be launched on the entire front, with the Infantry Divisions on the first line, while the two armoured Divisions were to take advantage of the breaches opened by the first echelons.

On October 6, facing the Syrians there were 9 Israeli Brigades with about 180 tanks; one of these Brigades was already deployed on the heights after the air battle of September, as a simple precautionary measure; but its presence on the heights turned out to be decisive. The two Israeli major units were both almost completely destroyed in two days of fighting, but the attackers had to pay such a heavy toll – both in casualties and time – that the Israeli forces, hurriedly mobilized and rushed on the heights, were able to contain at first, and then repel, the last stunted Syrian attack. After seriously damaging the Israeli positions, not only did the Syrians lack the strength to exploit their success, but could not consolidate it; after the battle, the Israelis counted 867 Syrian tanks destroyed or left behind, together with hundreds of vehicles and guns.



Guerrilla activity and infiltration routes in Angola



Portuguese by surprise. Repression was ruthless. The FNLA (National Front for the liberation of Angola), born in 1961, was the mouthpiece of the claims of the populations living in the north of the country. The ensuing guerrilla warfare had its most important sanctuaries in Zaire and Zambia.

General Spínola did not believe that the guerrilla warfare could be won with a merely military solution, and promoted a new strategy which began in 1968, with the concentration of the population in protected and organized villages. The army was employed for building in Guinea 15,000 houses, 164 schools, 40 hospitals and 163 fire stations.

The second aspect of the Portuguese strategy was the employment of aircraft for barring the guerrillas' supply roads across the border. Napalm, herbicides and defoliants were used against the guerrillas' villages. An effective coordination between fighter-bombers, helicopters and land patrols was achieved, which led to the success of the operations. Cavalry was also employed, in order to guarantee the security, on the flanks of advancing units, wherever the terrain was unfit for motorized vehicles.

The Portuguese strategy was capable of effectively confronting the Angolan situation up to the mid-seventies, but it was dearly paid, due to the international censure against the repression. In the end, the regions which Portugal had intended to keep in its sphere were inevitably abandoned.

THE SITUATION IN MOZAMBIQUE

The "Front for the Liberation of Mozambique" (FRELIMO) was a coalition of groups which started to operate in 1964. In 1971 it numbered about 8,000 guerrillas. The penetration roads from Tanzania were just inside the north of Mozambique, where the Portuguese were well prepared to face the guerrillas, while the roads coming from Zambia were a serious threat for the Cabora Bassa dam, in the Tete region.

In 1970 an antiguerrilla operation lasted seven months, employing 10,000 soldiers and causing 440 dead among the guerrillas.

Also in Portugal, as in France, in the conduct of the counter guerrilla warfare there were differences and lack of concentration of efforts between politicians and military. The officers, frustrated by the Government's policy, assembled in the "Movement of the Armed Forces", which planned a coup d'état soon after general Spínola was dismissed as Chief of Staff, following his criticism of the politicians. Spínola was made president of the Movement and exerted pressures for a total withdrawal of the military from Africa.

Mozambique became independent in June 1975 and power was taken over by FRELIMO.

PORTUGUESE AFRICA

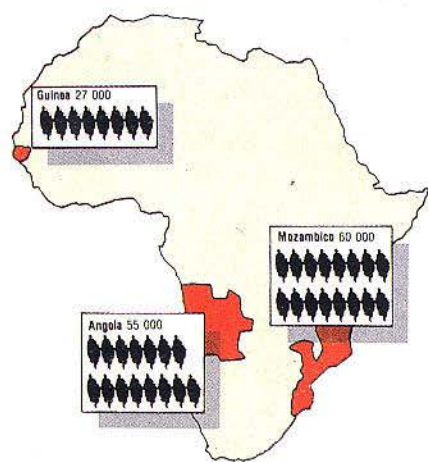
In Angola, Mozambique and Guinea the nationalist guerrillas fought a long battle, which ended in defeat for the Portuguese army. Portugal had been the first European colonial power to set foot in Africa and was the last to leave it in the mid-seventies.

The strategy adopted for confronting the guerrillas was influenced by the differences arisen between politicians and military about the line to be followed.

It must be remembered that in 1957 the Portuguese had in Africa about 150,000 men, of which: approximately 30,000 in Guinea, 60,000 in Angola and 60,000 in Mozambique. Compared with the Portuguese population, this figure was five times the number of Americans stationed in Vietnam in the same year.

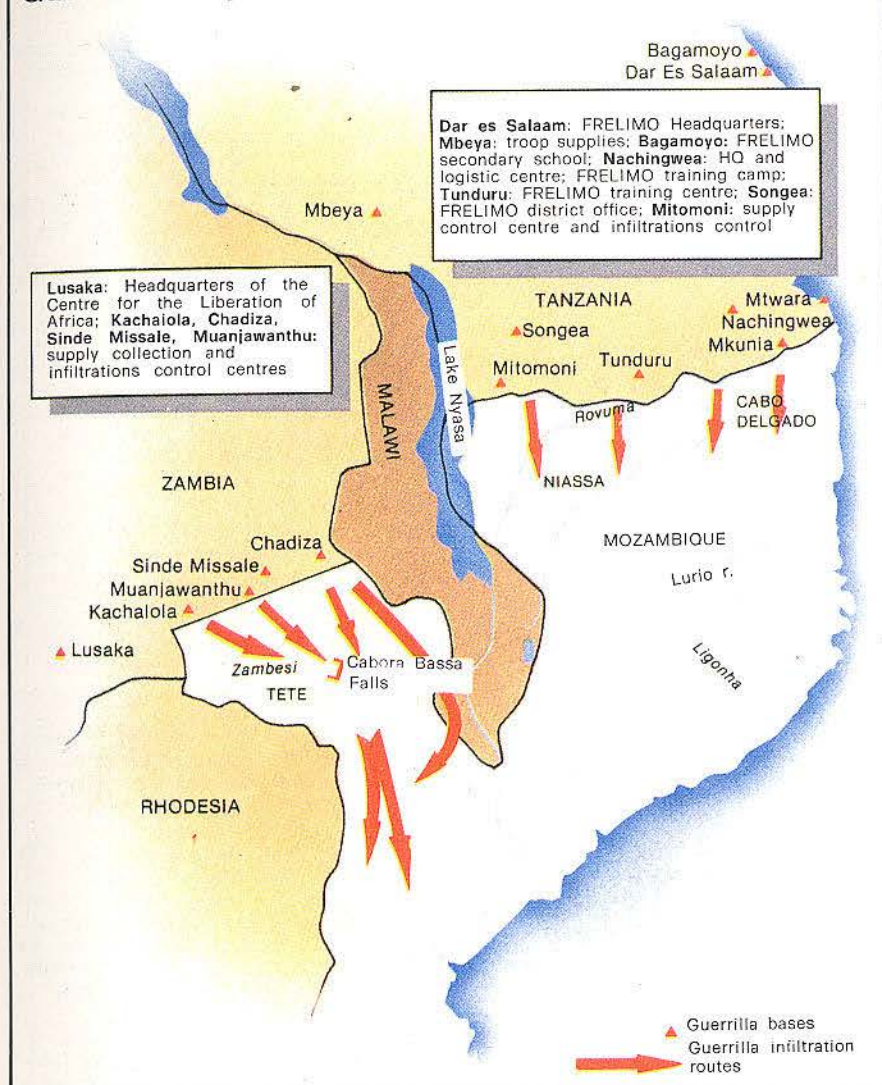
The MPLA (Popular Movement for the Liberation of Angola) was founded in 1956 and drew its forces from the "assimilados" living around the capital city of Luanda.

In 1959 a vast rebellion, developed in the coffee plantations, caught the

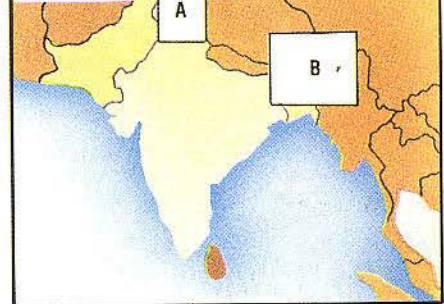


Portuguese forces in Africa during 1973

Guerrilla camps and infiltration routes in Mozambique

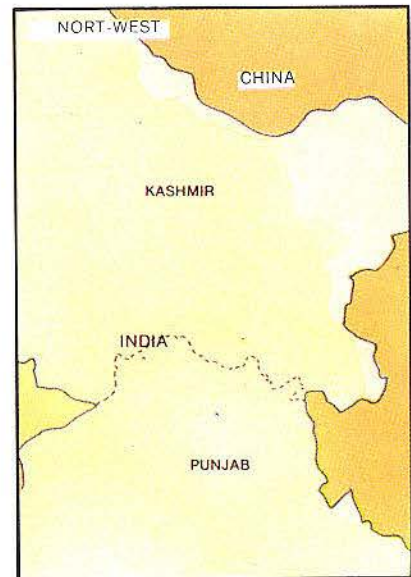


Chinese territorial claims in 1962



Territories claimed by China

The wars in 1965 and 1971 were preceded by border clashes in Kashmir and East Bhutan between India and China. An agreement over these borders had never been reached and in October 1962 China drove out from the two zones the Indian forces, which suffered 1400 casualties.

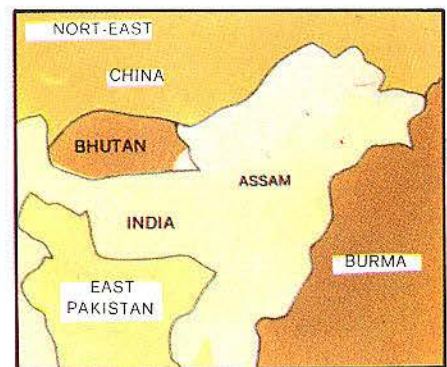


THE 1971 INDIAN BLITZ IN PAKISTAN

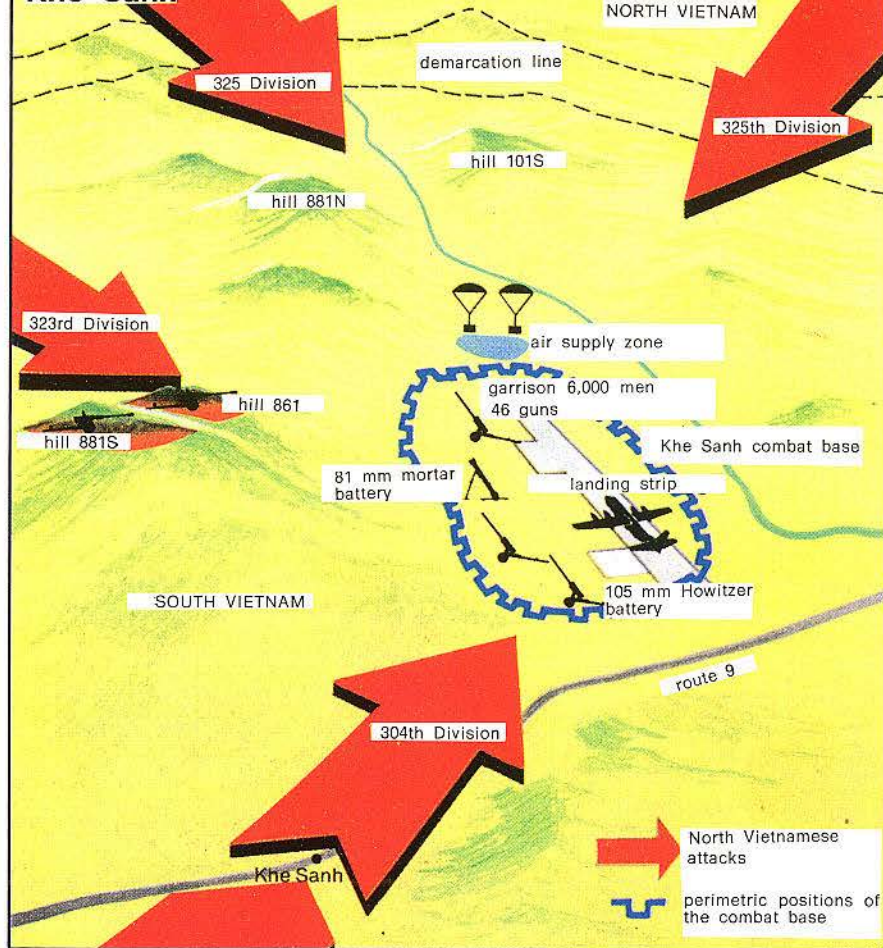
India had to limit its losses to the west and invade Eastern Pakistan before a possible international intervention: it had to prevent Pakistan from achieving substantial successes in the West and from resisting in the East.

India needed to win the war with Pakistan in a very short time, but having to cross rivers up to 8 km wide, one can well understand how difficult the problem could be. The Indian army had to prevent the Pakistani army from withdrawing to the Dacca valley.

As a matter of fact, the Indian victory was very swift and the war lasted just 13 days, from December 3 to December 16. In the west, where India had suffered heavy defeats in 1965, both parties obtained successes and there was hard fighting, but the overall balance was in favour of India. In the east, the decisive sector, India obtained total success. The Pakistani army was swept away by the initial attack. Rivers were the greatest obstacle to the advance, but on December 16 the Indian army reached Dacca: a new state - Bangladesh - was born.



In 1971 the war confirmed India as a great military power, closing the series of humiliating defeats suffered in the '60s at the hands of its Chinese and Pakistani neighbours.



VIETNAM AND PUBLIC OPINION

The mountain village of Khe Sanh became the emblem of the American presence in Vietnam.

Its defence had absolute priority, but the village had to be evacuated during the Tet (Buddhist New Year) offensive in 1968, after the Vietcong most important attack, which started on January 30, against Saigon and Hue. The Vietcong employed more than 50,000 men in this offensive and some small units reached the centre of Saigon itself. The attack was arrested by Gen. Weyand, who had held a large number of forces in reserve and in mid-March had started the tactics of infiltrating small patrols, spread on a vast territory, so as to make their elimination more difficult.

The Vietcong offensive ended in a military defeat, but it obtained a surprising psychological victory on the international plane: that of destroying the credibility of the American administration and of demolishing the wearing-out strategy. President Johnson was forced to stop the bombings in the north and to open negotiations. It was then clear that the war could not be won on the battlefield.

The Tet offensive brought to light the importance of the public opinion and the mass-media. Correspondents and journalists of the major dailies and weeklies informed with ample detail world public opinion, especially with episodes like the terrible massacre of My Lai, committed by the Americans.

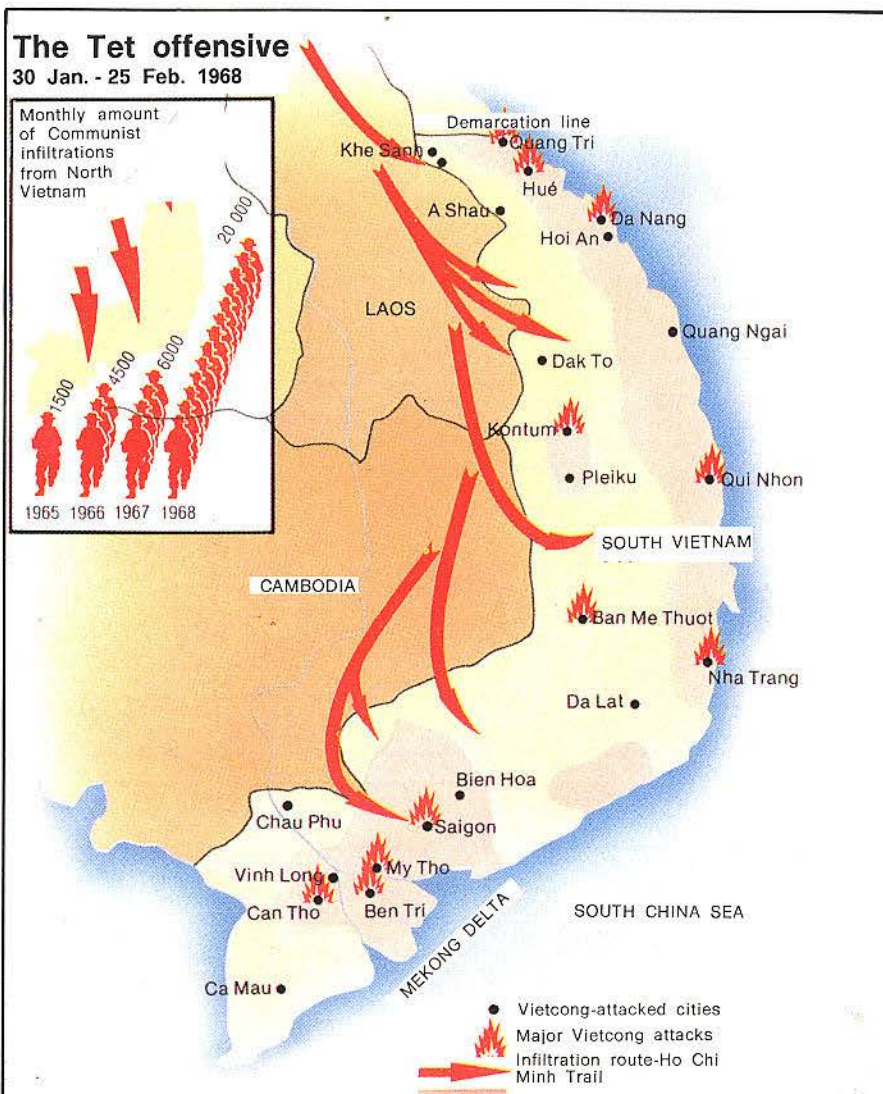
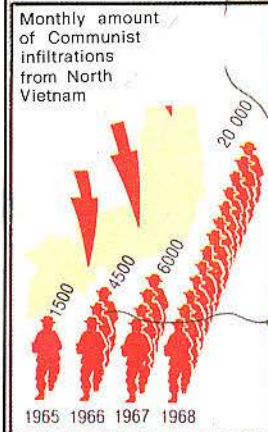
It ensued that millions of people in the U.S. started to oppose the war with deep conviction; their attitude was at the origin of the failure of the American intervention.

Dissent started with the 1968 sit-ins, which were soon followed by demonstrations, work stoppages and street protests. Nevertheless the opinion polls demonstrated that the majority of Americans agreed with the Administration: until October 13, President Nixon's policy in Vietnam was approved by 58% of the interviewed while 26% were uncertain; also among the young aged between 18 and 29, there was a majority of 52% in favour and 33% against.

The minority that opposed the war was nevertheless still substantial and very active. The atmosphere in the U.S. was comparable to what was felt in Europe during the Spanish Civil War: the conflict itself became a symbol of something greater, regardless of the truth or of the importance of the events.

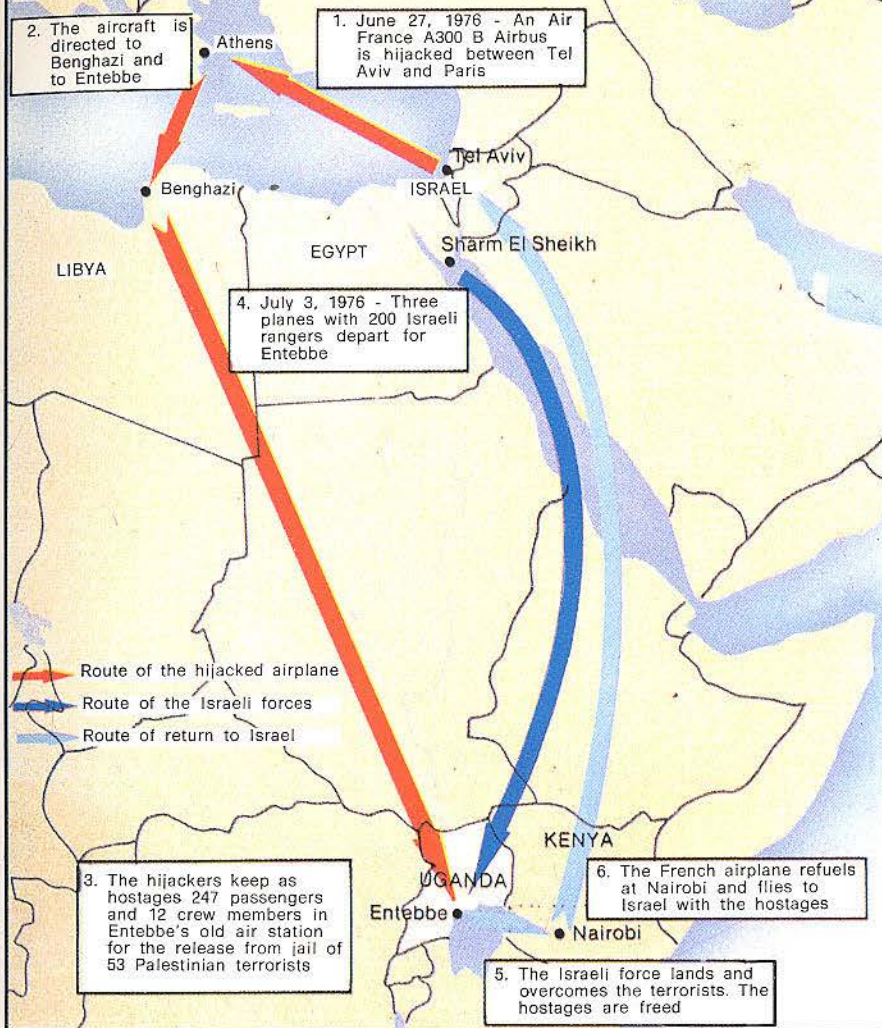
The Tet offensive

30 Jan. - 25 Feb. 1968



The Entebbe Raid

July 3, 1976



INTERNATIONAL TERRORISM

In the '70s the extremist groups, in order to achieve their political goals, have adopted the tactics of terrorism.

On the operational plane, the terrorists have as a rule avoided the "difficult" objectives, such as well-guarded military installations. Even though skyjacking had been one of the tactics favoured by terrorists in the '70s, experience shows that once the aircraft lands for refuelling the hijackers are made vulnerable by fatigue and are therefore exposed to the assault of the antiterrorism squads organized by several Western countries.

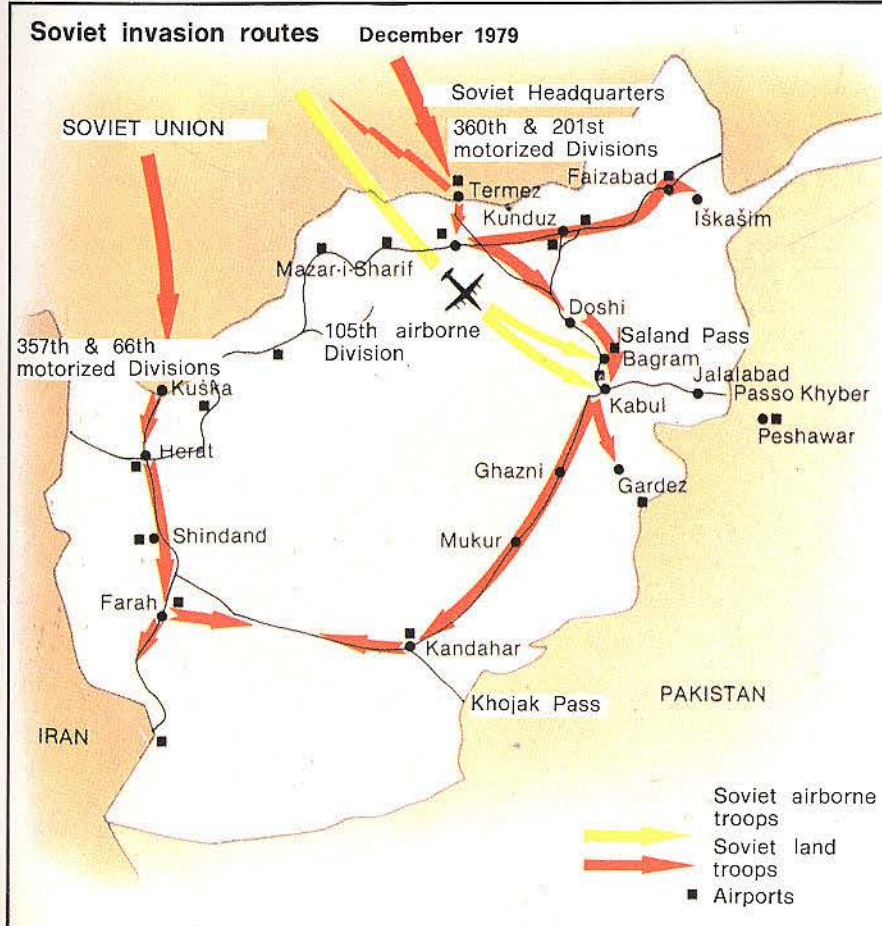


THE INVASION OF AFGHANISTAN IN 1979

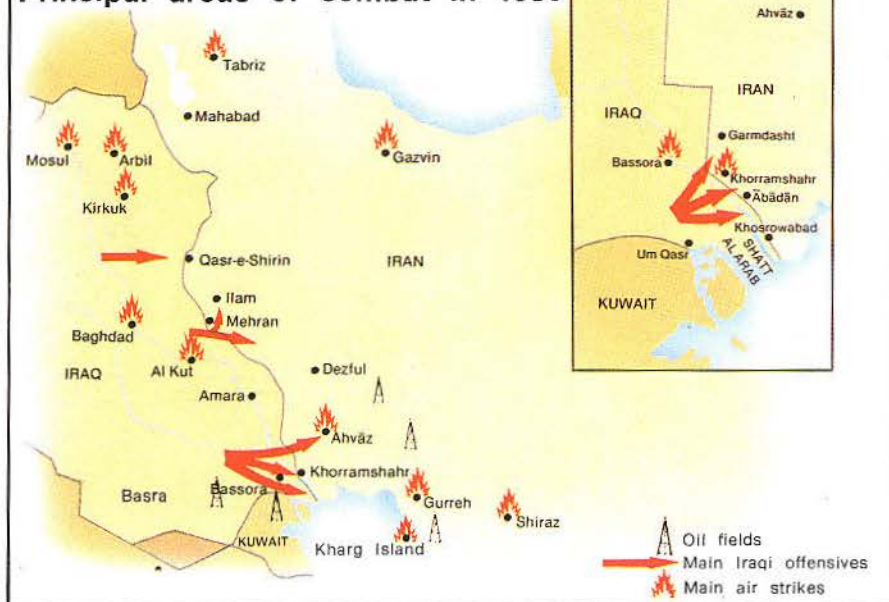
The operation followed the conventional scheme and had many analogies with the invasion of Czechoslovakia in 1968.

The first combat troops entering Afghanistan were from the 105th Airborne Guard Division. An advanced group landed to the north of Kabul on the military airport of Bagram, which had been occupied by the Soviets on December 24.

Between the 25th and the 26th of December, the bulk of the 105th Airborne Division, consisting of at least two regiments and supporting units, for a total of approximately 5,000 men, arrived at Bagram. This entailed 280 flight missions carried out by Ilyushin IL-76, Antonov AN-22 and AN-12 transport planes. December 27 was the crucial day: in the evening the Soviet paratroopers on BMD armoured personnel carriers entered Kabul and seized its key points.



Principal areas of combat in 1980

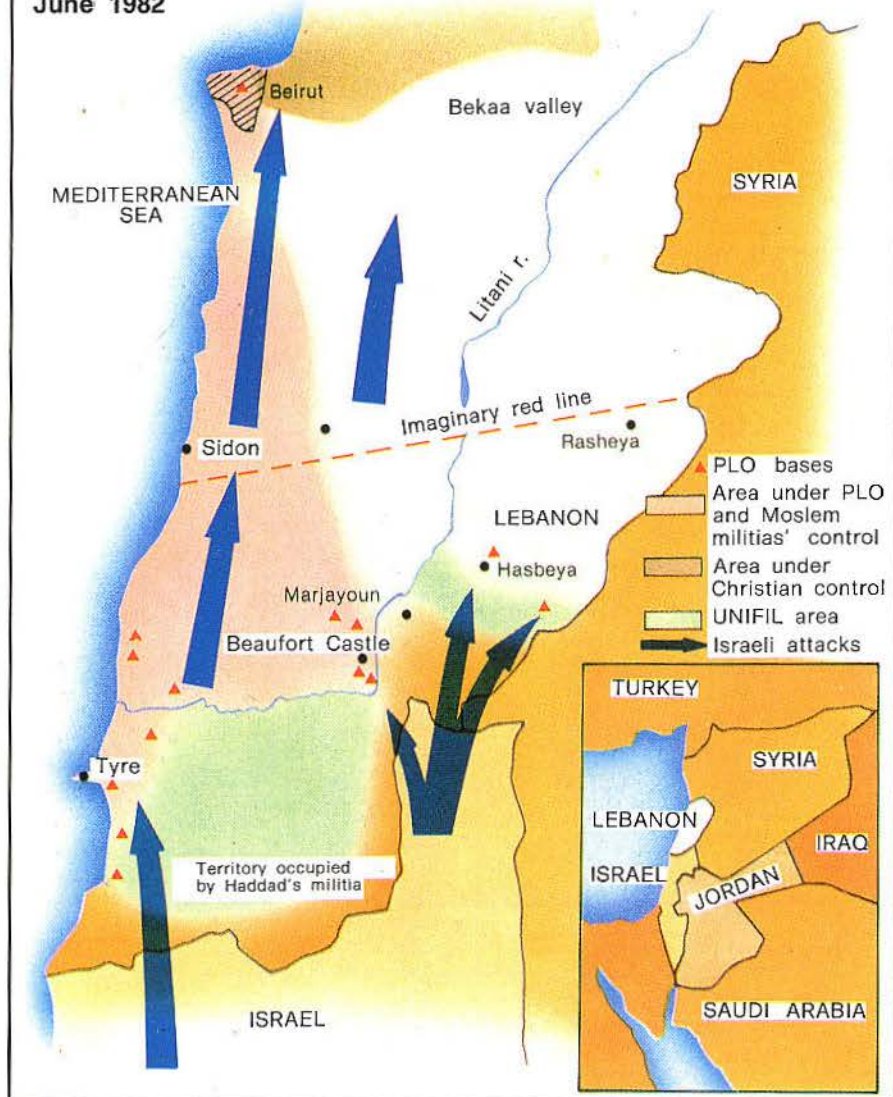


THE INVASION OF IRAN IN 1980

The Iraqi attack started on September 12, with a raid over the border: a diverting action was carried out towards Mahabad, but only with the aim of holding the Iranian forces in Kurdistan. In the centre, a mechanized Division took hold of Qasr-e-Shirin and blocked the mountain passes.

The Iraqi forces made no attempt to advance into the mountains: they obtained the most impressive successes in the south, where an armoured Division sped towards the east from the Amara-Basra road. The Iranians did not try to stop the Iraqi tanks in the middle of the desert, and the Iraqis made a rapid advance, until they reached the vicinity of the most important cities.

Israel invades Lebanon June 1982



THE INVASION OF LEBANON IN 1982

Sunday, June 6, Israeli armoured columns coming from the entirely mobilized Northern Region, crossed the Lebanese border with the objective of wiping out the PLO strongholds in southern Lebanon.

The armoured units penetrated deep into Lebanese territory, overtook the UNIFIL detachments and made contact with the elements of the Christian militia in "Haddad's Land". After crossing the Litani river, the Israelis disclosed the scope of their plans: elimination of the PLO from Lebanon and establishment in Beirut of a pro-Israeli government. The operation was appropriately called "Peace in Galilee", because that region would never be secure as long as the PLO operated in Lebanon.

The Israelis showed a brilliant strategy and meticulous planning. The air force swept away the opposition SAMs and MIGs and once control of the air was ensured, the flights of fighter-bombers, bombers and helicopters could give a continued 24-hour support.

All tanks, self-propelled artillery and armoured infantry units proceeded along three main directions.

THE FALKLANDS-MALVINAS CONFLICT

The air and naval forces had great importance for the final outcome of the Falklands-Malvinas conflict, but in the end the result was decided by the land expeditions.

The British, in order to overcome an organized defence, should have had, according to the well-established rules of warfare, a three-to-one superiority. In reality 5,000 English troops clashed with 10,000 Argentines, who could avail themselves of light tanks, artillery and supply depots.

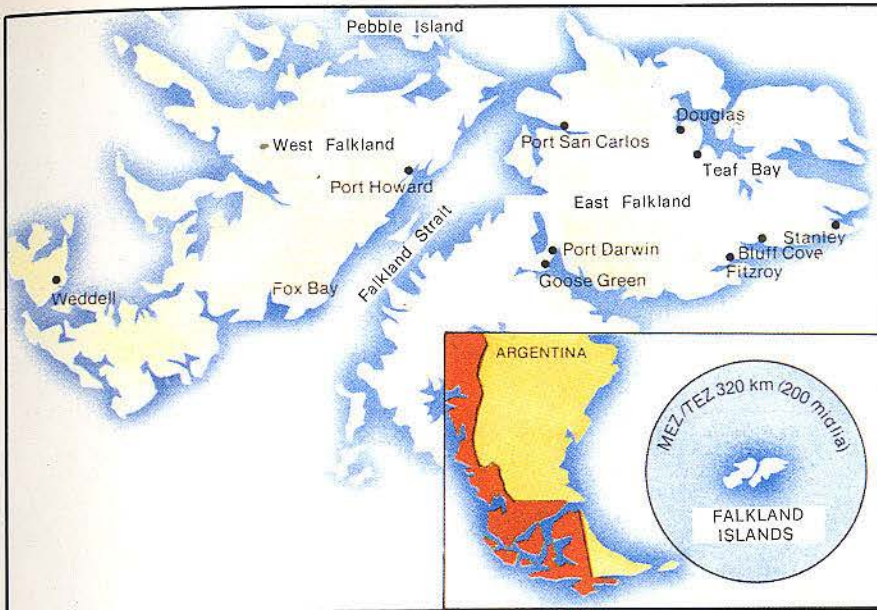
Despite their deficiencies, the Argentines behaved excellently.

They were defeated by the superior qualities of the British: will, initiative, better command action, higher training, perfect coordination between services.

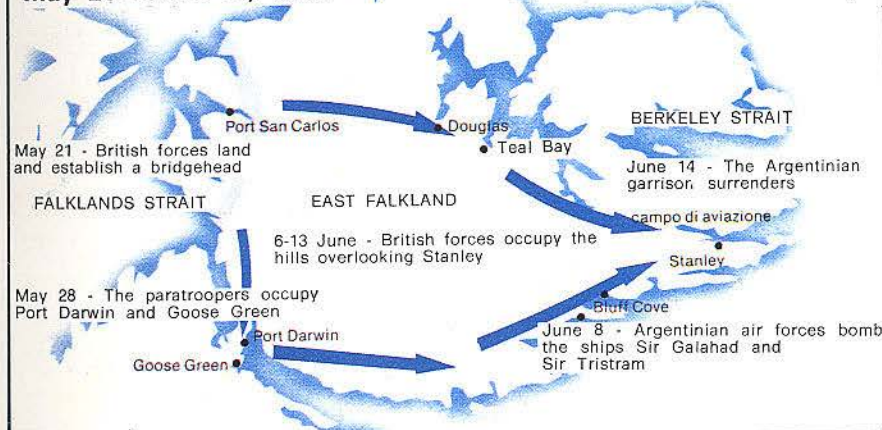
From this point of view, the Falklands-Malvinas conflict does not differ from the other numerous conflicts in which the principles of war have had valid application and confirmation.

At the beginning of the Falklands conflict, the Argentines possessed an excellent naval force, but Britain reacted immediately and with surprising energy. Within a few days after the invasion some of the world's most powerful warships, vanguards of an operational force that later was to include more than 100 vessels, set out from their bases in Great Britain and their Mediterranean training areas and sailed towards the South Atlantic. The "Hermes" and "Invincible" aircraft carriers, with 20 Sea Harriers on board, supplied the air cover and ensured the command action. During the conflict they were protected by 8 destroyers, 13 frigates and 4 nuclear-propelled submarines, equipped with sophisticated weapon systems, such as the Sea Dart, Sea Wolf and Sea Cat SAMs, the Exocet and Sea Slug SSMs, the Mark 8 and Tigerfish torpedoes. The operational force had also an amphibious landing component.

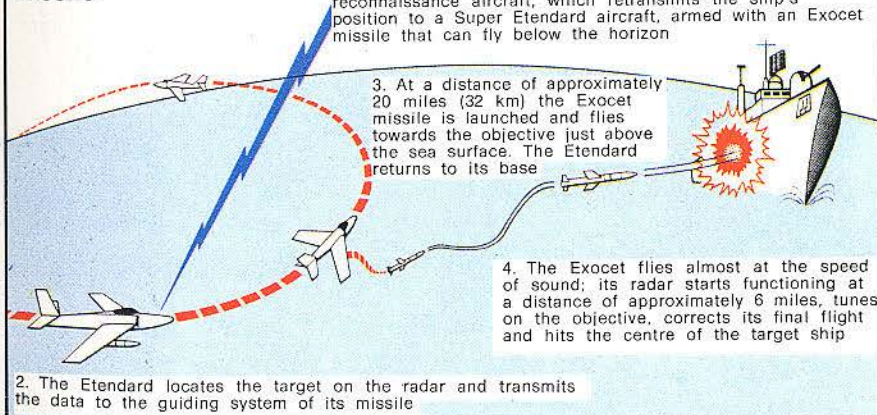
The key of the ability to remain at sea for a long time was the creation of a continuous chain of supplies that ran from Great Britain to the island of Ascension and from there to the operations area. This could be done thanks to the requisition or charter of more than 50 merchant ships – from the luxury liner "Queen Elizabeth 2" to a great number of container ships, ferries and tankers, the first of which were already operating in mid-April – without which the operational force could not have survived.



Infantry operations May 21 – June 14, 1982



The AM 39 Exocet air-to-surface antiship missile



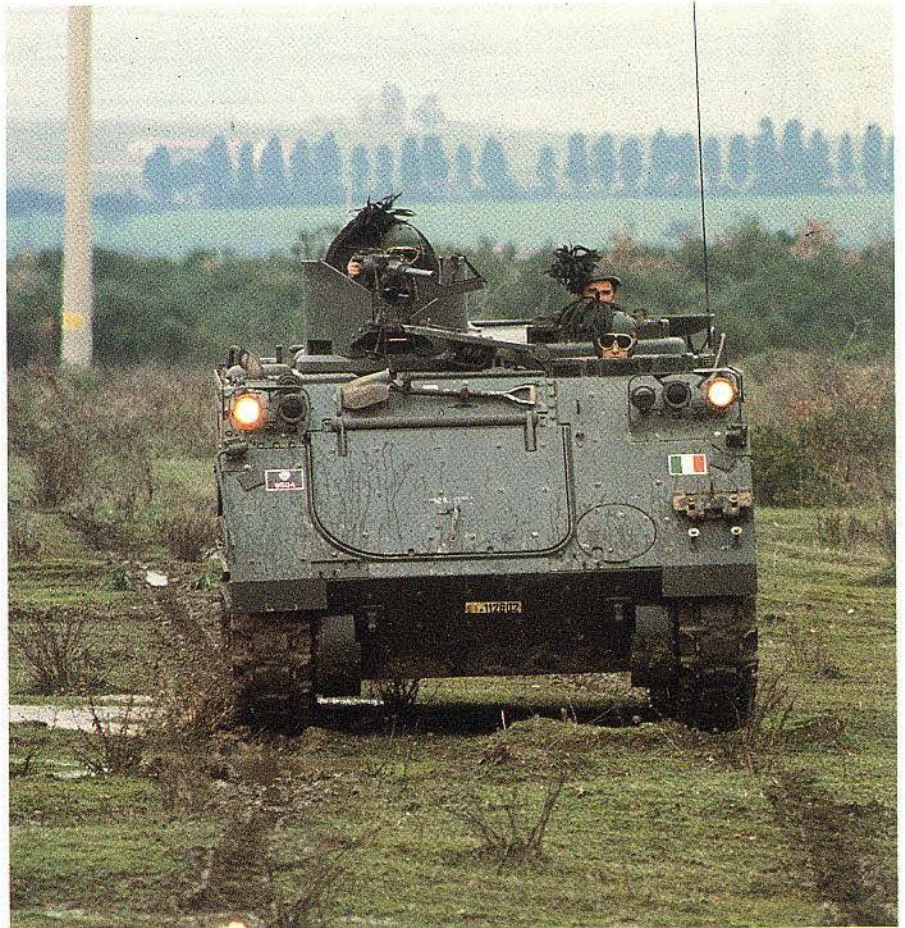
The French-made air-to-surface Exocet missile was already in the Argentinian Navy's inventory before the Falklands crisis, and during the conflict has been employed with good results. Vis-a-vis the Exocet, many defence systems proved inadequate.



THINKING ABOUT



LIGHT INFANTRY



There is a lot of talk about light infantry.

As is often the case, also this time "the stone has been thrown in the pond" – or better, in the Atlantic – by the United States. With the speed typical of our times the waves have rapidly crossed the Ocean and reached Europe.

To pick up and further probe into the studies and initiatives started within that superpower is certainly an opportunity not

to be missed, if for no other reason at least because these studies are the abstract of many direct or mediated experiences which the U.S. organization can acquire in every theatre of the continent.

Nevertheless, having had the input, it is wise to avoid retracing generically and employing, without investigation, respectively the rationale and the options coming from the other side of the ocean.

One could reach results which, albeit valid as rational models, would hardly – and only by chance – turn out to be of any use in our country.

High mobility is one of the characterizing features of light infantry.



Bersaglieri in a training exercise.

In the superposition of the questions regarding the heavy and light Division, a subject that has filled many a page of the specialized press (1), what interests us are not the solutions found but what gives shape to the initial problem, which shows three facets:

- the necessity that confronts the U.S. Army to set the *heavy Division* in motion, in order to reach the various operational theatres in which it may have to fight;
- the availability of transport planes which, due to the huge weight and bulk of such units, would not allow to carry out strategic air transport operations;
- the cost of the *heavy Division* which, added to the operating expenses, is considered prohibitive vis-à-vis its employment mainly in operational

environments (for instance in the built-up and wooded areas of Central Europe) that would not permit the unit to express in full its enormous potential.

The light infantry is the "stars and stripes" solution, albeit **partial**, to the specific problem.

It has been actually impossible to reconcile the need to reduce the weight and bulk of the unit to be transported with that of containing the costs while maintaining unchanged the operational efficiency of the units.

In such conditions, all that has been saved in weight has been made up for with the employment of very expensive technologies. The Italian military organization does not have to carry out operations of strategic air transport, but it wants to accomplish its tasks as economically and as efficiently as possible, in the operational

environment typical of the national theatre.

In the light of the above considerations, is it useful and convenient to introduce the light infantry in our instrument?

In order to give a factual answer one ought to analyze the problem. This analysis, as limited as it may be, must nevertheless take into consideration at least the outstanding national characters, such as environment, threat and available resources.

The survey cannot prescind from the influence that the technological evolution will have on the Service and its employment, because the solutions found would risk to be anachronistic and abstract.

In trying to find the answers, the support of military

history can also be of some help getting acquainted with doctrine and regulations in view of avoiding at least the mistakes made and ascertained in the past.

CONSIDERATIONS ON THE ENVIRONMENT

In the last years, both in the East and within NATO, the inhabited centres have been studied with growing interest for operational purpose.

The foreseeable slackening of pace caused by intensive urbanization (but also by mountains, hills, wooded areas and by the development of a type of farming which employs reinforced stakes, thread-like wires, fencing and anti-hail metal nets and powerful irrigation systems) seems to play into the defender's hands and seriously thwart the offensive strategies based on the theory of neutralizing the adversary organization through sudden, deep and swift penetrations (2), carried out mainly by armoured forces.

Also our national territory, like that of other Western European countries (3), has undergone deep changes in the abovementioned direction and it can be assumed that the attacker could hardly avoid engaging in combat in obstacle-ridden and appropriately defended areas.

One may ask, on the other hand, how the armoured formations could proceed with speed through maize fields often higher than the tanks' guns, or among orchards, vineyards, woods and small land properties, often fenced by rows of trees and dangerous ditches (4), or through the so densely built-up Alpine valley bottoms.

The foreseeable slowdown in the operational pace, caused by massive urbanization - but also by mountain and wooded environments - favours the defender and seriously hinders the offensives conducted mainly by armoured forces.





Paratroops training for combat in built-up areas.

But also the defender will be unable to react swiftly against sudden penetrations; he will be unable to achieve dynamic reactions accomplished by substantial armoured formations which, even if they arrived in time in the right place, could hardly exert their power owing to the limited spaces for manoeuvre and narrow fields of vision for firing.

This stated, is the available instrument appropriately shaped

or could it be convenient to adjust it in order to adapt its structural components to the transformed natural environment? What could be changed, and how?

CONSIDERATIONS ON THE THREAT

The threat that can be foreseen by studying the adversary potential is – and will probably be in the future – characterized by a predominant employment of armour. This is what can be read on the

military press, and what can be heard in professional discussions among "experts".

But one may very well have his doubts, even considering that in the last decade, the conventional threat against NATO (5) has undergone a process of modernization and strengthening much more intense than in the past, precisely as regards the armoured component and the components designed for the support of the armoured battle.

As a matter of fact, this choice might have been made for political reasons, both national (perhaps due to the determinant weight of the military *Establishment*) and international (for instance, to make an impression on public opinion with the massive increase in the number of tanks, helicopters, artillery, etc. ...).

Whatever the reason, the restraints, caused by environmental modifications, to the options of development of offensive or defensive operations based on tank combat, are under everybody's eyes.

It has become impossible to prepare an armoured mass and think it will remain unchanged while it proceeds towards its objective through an extremely compartmentalized terrain.

Likewise the mechanized combat carried out with swift scattering of the forces appears by now, in the environment we have been talking about, almost a chimera.

Such being the case, the question is whether the assumption that the threat will be mainly constituted by armoured units employed with typical attack procedures could not be stemming from a "static" vision of the enemy potential.

Can one really presume that the enemy, who is not dumb, would end up getting involved in offensive operations with forces and employment procedures unfit for the environment?

It is probably more realistic to think that the adversary

Light infantry should be a polyvalent speciality, equipped with technologically advanced light weapons and fast, reliable vehicles, sufficiently armoured, and with antitank and anti-infantry capabilities.

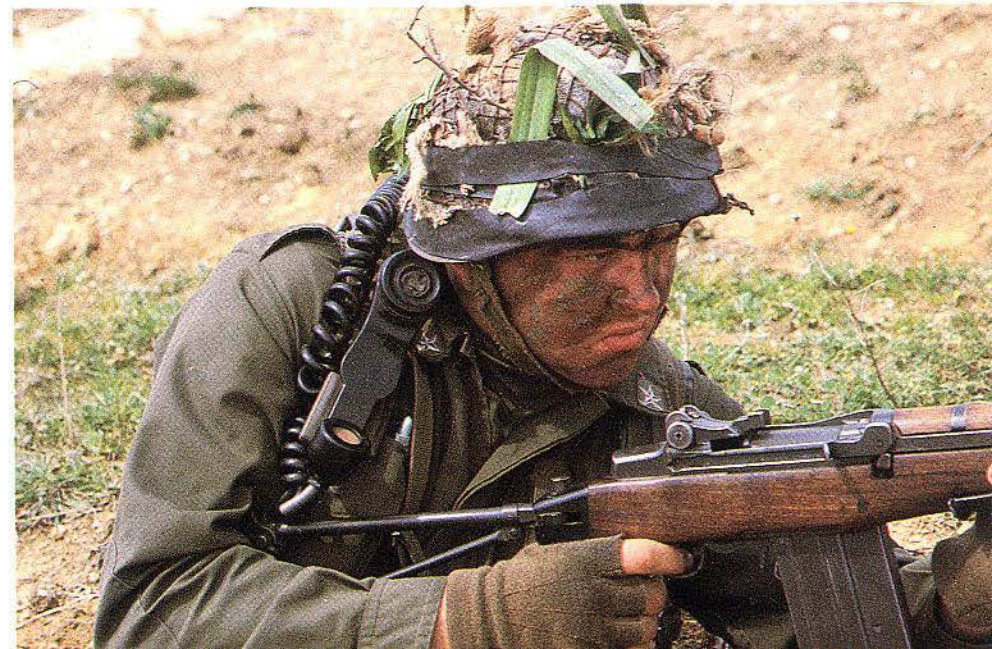
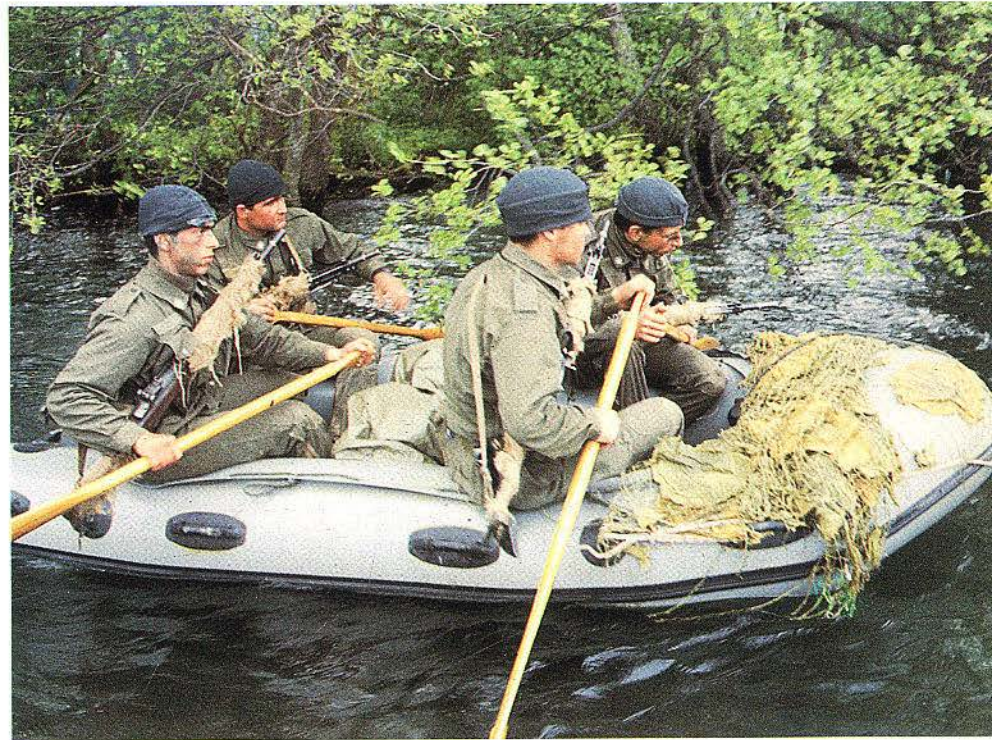
will use the forces at his disposal in the way and to the extent possible to him. Without extending the investigation to the third dimension – the analysis would become much more complicated – one can surmise that many tanks would be used as guns, for the support of a large number of mechanized infantrymen who would have to alight, while small tank formations (probably the remainders of those which during the approach phase would be mown down by artillery, antitank helicopters and tactical air force) would penetrate wherever possible through the defence net, stirring up confusion behind the lines, but would certainly be unable to bring about significant results. The operational problem of tomorrow's combat formations on the offensive is no more that of outflanking a "Maginot Line" and spreading over the land, but that of establishing a contact and then proceeding without getting entangled.

To counter a threat so redefined, is it possible and convenient to make changes in the instrument at hand? What to change, and how?

CONSIDERATIONS ON THE AVAILABLE RESOURCES

The availability of financial resources, especially in peacetime, is always less than the amount the Armed Forces of any country deem necessary. This condition is not a recent one, caused by the current inflationary processes but can be regarded as an inborn characteristic of the structure.

From this undeniable fact, punctually confirmed by the study of military history, at least two corollaries emerge which, if taken into account, enable



us to employ at best the available resources:

- the instrument should be well balanced in all its components;
- money should be saved whenever possible.

The first corollary advocates an instrument shaped in an effectively functional way, a "self-contained system", made up by subsystems as self-sufficient as possible. For instance, the availability of an armoured unit, without the target acquisition and the command/control systems suitable for planning its most advantageous employment is today – and will be to a greater extent tomorrow – a useless waste.

The second pertains to the need of increasing the profitability, in terms of cost/effectiveness of the "self-contained system" and of each of its component subsystems.

From a methodological viewpoint, the application of the first corollary would lead to: *identify a reliable hypothesis about resource availability, from which to derive the best feasible instrument and, finally, find out the tasks that can be accomplished in qualitative and quantitative terms (there is in this the curious recurrence of an eighteenth century – or, at least, pre-Napoleonic – scenario, in which princes could wage "as much war as they had money!")* (6).

In so doing the amount of available resources would be duly considered, save further verification of what tasks – listed according to the priorities emerged from the study of the threat – could be accomplished and what capabilities an instrument so conceived would have in terms of deterrence.

Once the tasks were established, in response to the second corollary, the next step would be to "calibrate" the units according to the tasks.

Even considering the present instrument well balanced in all its components, in that

it tends with time to follow the pattern of the national development methodically studied by the General Staffs (the analytical examination would deserve a separate study, impossible here) the mere application of the second corollary would introduce again the questions of what – and how – to change, in order to improve the instrument's effectiveness.

CONSIDERATIONS ON SOME ASPECTS OF TECHNOLOGICAL DEVELOPMENT

Since the first laser-guided bombs made their appearance in Vietnam, the military experts have agreed upon their economic and operational suitability.

It was particularly after the "Kippur" war of 1973 – in which terminal-guidance antitank and anti-aircraft missiles were widely employed – that the interest over this type of weapons arose.

Called "smart" bombs when they came out, they became subsequently officially known as "PGM" (*Precision Guided Munition*).

Today that the acquisition of objectives is made possible in real time at considerable depth, and PGMs have a relatively contained unitary cost and can hit multiple targets with very high probability and effectiveness, some experts declare that the *new precision guided weapons, together with the highly sophisticated vehicles, expand and diversify the fire power of the conventional forces, improving at the same time their flexibility.*

Moreover, and even more important, these weapons forecast a remarkable widening of the areas of interest and responsibility, within which any objective detected will end up inesorably destroyed.

This clearly shows that the large-scale adoption of deadly precision weapons will entail a radical change in the traditional operational environment we are used to consider.

Right.

A tank battle in which sensor-fused weapons are employed. Air-carried TMDs (Tactical Munition Dispensers) drop the SFWs, whose rotating motion creates the centrifugal force sufficient to release four Skeet warheads, which speed to their respective targets.

The new environment will not be able to tolerate the presence of traditional units which embody today the concept of mass or power.

The units, that is, which, up to now, have been considered determinant for the success of the operations.

I refer especially to armoured units, surface major naval units, formations of aircraft. Owing to their size, they are easily detectable, whatever their location, and therefore extremely vulnerable to the new weapons (7).

At this point, in order to prepare today what will be needed tomorrow, the question is again; what to change, and how, in our instrument.

SOME DEDUCTIONS

From what we have been saying, the following deductions can perhaps correctly be made, concerning the foreseeable development of operations:

- very compartmentalized areas are not apt to be efficiently defended with the procedures of employment typical of the armoured forces. On the other hand, the extent and proliferation of such areas, while suggesting their use as obstacles of remarkable importance, if need be in aggregation with each other and with other more mobile and dynamic structures, demand at the same time, given their considerable number, the most economic defense solution;
- the penetration of enemy armoured formations (but also the employment of air- and/or airborne units or of "fifth columns"), albeit small, can threaten from the rear the frontline units, the fire



Murphy's Law



Armoured formations find it difficult to move speedily in highly compartmentalized and built-up areas.

sources, the logistic and command/control organizations and the rear areas, with the result of demolishing, with the destruction of a single component, the entire defensive structure;

- the mobility, and the survival itself, of substantial combat formation will definitely be restricted for both the attackers – who would suffer considerable losses even before storming the adversary – and the defender determined to cut down and destroy possible penetrations through the development of dynamic reactions with the massive employment of tanks.

The existence of such formations, in fact, on account of the existing possibility that they be destroyed by shells with terminal-guided submunitions (8) also at considerable depth, would no more and not only

essentially depend on their dangerousness but on the evaluation of how much it would cost to destroy them.

CONSIDERATIONS ON DOCTRINE AND EMPLOYMENT OF THE UNITS IN COMBAT

The doctrine of employment of the series 900, which came out in the mid-seventies, albeit still valid in substance, could not take into account the operational reflections of the present natural environment nor the role that the artillery will assume in the near future (the jump in quality which will be made in the short/medium term with the employment on the field of the emerging technologies will probably have such an importance that, as it happened with the air force in the period between the two world wars, the artillery will presumably have a determinant and independent role besides that of supporting the land forces).

Neither could it envisage the incidence of the not-yet launched programmes of modernization, nor reflect the results of the studies started in various sectors, within the Service and in the international forums in which Italy participates (9).

Based on these considerations and in the light of the inferences drawn at the end of the initial analysis, it seems appropriate to think about the modifications to be made in the body of doctrines and in the instrument, particularly as regards infantry.

The first ones, in order to make the "self-contained system" effective and well balanced, with maximum economy, when the result of numerous development programmes now under way (MLRS, CATRIN system, "VCC 80", etc. ...) will be brought into service.

The others, in order to achieve the highest effectiveness in the employment of the new strengthened instrument.

The mechanized units currently in service with the Army are all, without exception, equipped with VTT "M 113s" or equivalent derivations. Also the armament is identical and nothing differentiates them.

Their employment takes on a character of more marked dynamism in the elementary armoured Major Units but for the rest, as envisaged also by the doctrine (four elementary tactical action), is common to all mechanized and armoured minor units.

The delivery of the "VCC 80s" will bring about the first difference and the so-called "from on-board combat" of the mechanized troops will become possible, with only one restraint: that it will have to be developed by less and less numerous formations.

Therefore it will be useless to continue to keep in reserve a lot of tanks, since they cannot be used in dynamic reactions. They will be instead profitably employed in the "integrated"

action (10) in operational activity on the front line, i.e. as mobile and protected antitank weapons, capable of timely redeployments along the front as soon as the efforts of the enemy become evident.

On the other hand, the cover that can be obtained by making use of the natural environment and artifacts made on purpose if necessary, together with swift and short displacements, will give the tanks, provided that they be appropriately spread out, the best conditions for survival.

It must be added that the carrying on in depth of defence, another of the roles attributed to the reserves by doctrine, will also be compromised.

In the battlefield of the future, in fact, it will be probably impossible to reiterate the battle without sacrificing the forces in contact and employing new forces in depth.

The fronts will be stable, no less than they were during WWI, and the defender who is forced to retreat, leaving behind all covers and fortifications he had managed to set up, will find his forces unsheltered and unable to contrive anything to escape the revived deadliness of the new adversary artillery and air force.

Of the three employments foreseen for the reserves, only that of feeding the concentrations of independent forces continues therefore to be valid, while the others, the ones more suitable for the armoured units, are increasingly reduced.

The tank units will be reemployed in the ways previously pointed out, or in other roles which envisage wide spreading and limited mobility.

Whatever the solutions adopted, it is certain that considerable mechanized forces will be available, since they will no more be indispensable to the conduct of



the combat today considered typical of the armoured means and specific in these compromised roles.

Later on we are going to see what possibilities of employment exist for this "economized" infantry.

DOCTRINAL PROSPECTS

The autonomy given at the various organizational levels in each area of responsibility and jurisdiction – an autonomy that is taken away upon reaching the "stiffening" or containment lines, in order to allow the higher Commander to take over the conduct of the operations through a manoeuvre aimed at reestablishing the initial situation, or at continuing the defence in depth with the forces recovered – is the outstanding feature of the doctrinal series "900".

It appears that the limitations imposed to mobility, which, as we have already remarked, reduce the ability to

manoeuvre and make problematic to recover the forces, will produce deep changes.

First of all, the "enlightened" autonomy, made so by the "discreet" presence of the Command and higher echelon reserves, will have perforce to cease and then an intermediate organizational level, Brigade or Division, will presumably have to be abolished.

Besides, wasn't it the limitations imposed by the environment to the mobility and development of the manoeuvre that advised against the introduction of the divisional level in the organization of the Alpine troops?

In the author's opinion, nevertheless, what could not be accomplished through the best use of the "enlightened autonomy" philosophy, could be obtained through the "saturation of the front".

This could be achieved by introducing in the system the defensive structures hinged on the numerous heavily compartmentalized areas

available in the presumed battle zone, together with the defensive field structures, necessary for making the entire organization consistent.

All this should be done along a belt as deep as possible (... the princes could wage as much war as they had money), which, if the events required it, from the border would reach backwards as far as to include almost all the forces destined to the battle and would mark the new line of resistance.

The remaining forces, conveniently scattered within the battle area, would be charged with two types of tasks, aimed at maintaining the defensive organization constantly complete and well balanced in each of its components. Therefore it would be envisaged:

- in the rear area: organized defence of the fire sources, of the logistic and command/control organizations from the threats brought through the third dimension, from the sea and from guerrilla warfare;
- in the entire battle area, therefore both in the Position of Resistance and in the Rear Area, the timely reinforcement of any enemy penetration, however accomplished.

A POSSIBLE DEFINITION OF LIGHT INFANTRY

In response to the many interrogatives which have systematically concluded the various passages of the initial analysis, and in relation with the considerations about the future employment and doctrine, here there is a tentative outline of what the Italian light infantry could be: **a multivalent speciality, capable of fighting both in the open field (in the national natural environment) and in largely compartmentalized areas, also in sectors already controlled by friendly forces, equipped with small-size but speedy and reliable transport means, sufficiently armoured and inexpensive (as compared to**

the cost of PGMs) with antitank and anti-infantry capabilities.

The light infantry's main task should be that of intervening with timeliness in support and/or integration or replacement of friendly forces, also within the defensive structures already engaged in battle, with the purpose of modifying the gravitation of the defensive efforts, redressing difficult operational situations and cutting down at once enemy penetrations and infiltrations.

Such speciality would inherit the traditions of the "Chasseur" units, which in the last century were in service with most European armies, for fighting and acting swiftly and daringly in support and integration of the other combat units, made increasingly heavy by the technical progress (11). In the operational context outlined, the reintroduction of these units would seem to be precluded by the readoption of a "fixed defensive front".

Therefore the "chasseurs" speciality (to use a venatic term), be they "on position" or in movement, be they isolated or in a "hunting party", be they engaged in battle directly or going in support of friendly forces in trouble, is necessarily connected with a system of command and control, today technically feasible, capable of ensuring:

- distinction of the friendly forces from the adversary ones, in order to achieve the instant integration of the "line" infantry and the light infantry components, avoiding the problems that would ensue from dangerous identification uncertainties;
- constant assessment of the developing situation (adversary concentrations of power, efficiency level of the friendly deployments, etc. ...) in order to allow a rapid redeployment of the forces;
- areal operational control of the forces, in order to combine the manoeuvre carried out by the light infantry with the

actions developed by the forces positioned in the area.

The command and control system is therefore a determinant and indispensable element for the best employment of the light infantry thus conceived.

It must be pointed out that this would not come cheap: the combination of high mobility and fire capability with a system of command and control of the type just described costs a lot of money! Nevertheless, in the light of the doctrinal and organizational considerations previously expressed, the next consistent step is to find out a realistic possibility of making adequate savings in other operational components of prospectively lesser importance.

On the other hand, organizational solutions which envisaged a "poor" infantry, insufficiently armed and – worse still – on foot, have no reason to exist. This option is already inherent to our present infantry which in the unlucky case of defeat would drop their heaviest and most sophisticated weapons and carry on particular forms of combat, accomplishing their task with whatever means, in compliance with their oath.

We purposely avoid mentioning the helicopter as a transport means because, in consideration of the foreseeable financial availabilities, it is unrealistic to conceive the establishment of units permanently organized on the helicopter component and the infantry necessary to accomplish heliborne actions. Consequently, as long as we shall have to constitute airborne tactical units, any infantry unit, with the appropriate adaptations, will, as a rule, be able to supply the forces needed for an airborne action.

Right.

Light infantry must be able to fight both from "on board", thanks to the armoured combat vehicles, and on foot, like any mechanized unit.



SHAPING THE SPECIALITY

The speciality should be shaped to the foreseeable operational needs in the areas of the defensive battle, according to the environment and the operational goals. We do not think that substantial differences exist between mountain and flat country environment as regards the tasks to be entrusted to light infantry.

In a mountain environment the continuity of the Position of Resistance, albeit objectively unaccomplishable in practice, is actually replaced by the combination of defensive structures, set up for the protection of the critical zones included in a system of numerous and large impervious areas.

The possession of these, or their conquest, in general, does not influence excessively the battle's outcome.

Nevertheless, controlled as they may be, they are areas



of such extension that they advantage the adversary in the accomplishment of vertical outflankings and limited surface infiltrations.

Taking for granted the substantial similarity, in the sense just pointed out, between the organization of the Position of Resistance in the plain and that in a mountain environment, in conclusion we shall restrict ourselves to outlining the features of the light infantry units, without quantifying specific requirements, a precise definition of which would require an analysis much deeper than can be developed here.

First of all, we should create units for carrying out particular forms of combat, to be employed behind the lines in counterinterdiction operations. These units, manned by personnel particularly motivated

and trained to live in "symbiosis" with the environment, would have the task of watching, intercepting and eliminating, using special techniques (12), hostile raiders and infiltrations of limited size.

An areal command organization and a partitioning of the forces in groups and patrols, together with an efficient, compact and protected communication system, would permit moreover to detect operations of area interdiction under way and to eliminate this threat with one's own means or by favouring the prompt intervention of other units capable of resolving the situation.

Secondly, there should be units charged with the task of sweeping away both the infiltrations in the Rear Zone and the limited-size penetrations

occurring in the position of resistance (the neutralization of considerable penetrations would be a job for the artillery, armed and antitank helicopters and air-tactical forces) (13).

The units, organized in peacetime for training purposes in companies and battalions, would have in operation a totally atypical tactical organization. As a matter of fact they would almost uniformly be spread over the entire battle area, and would operate in a great number of "teams" conveniently coordinated and called for intervention according to their actual location, in the quantity

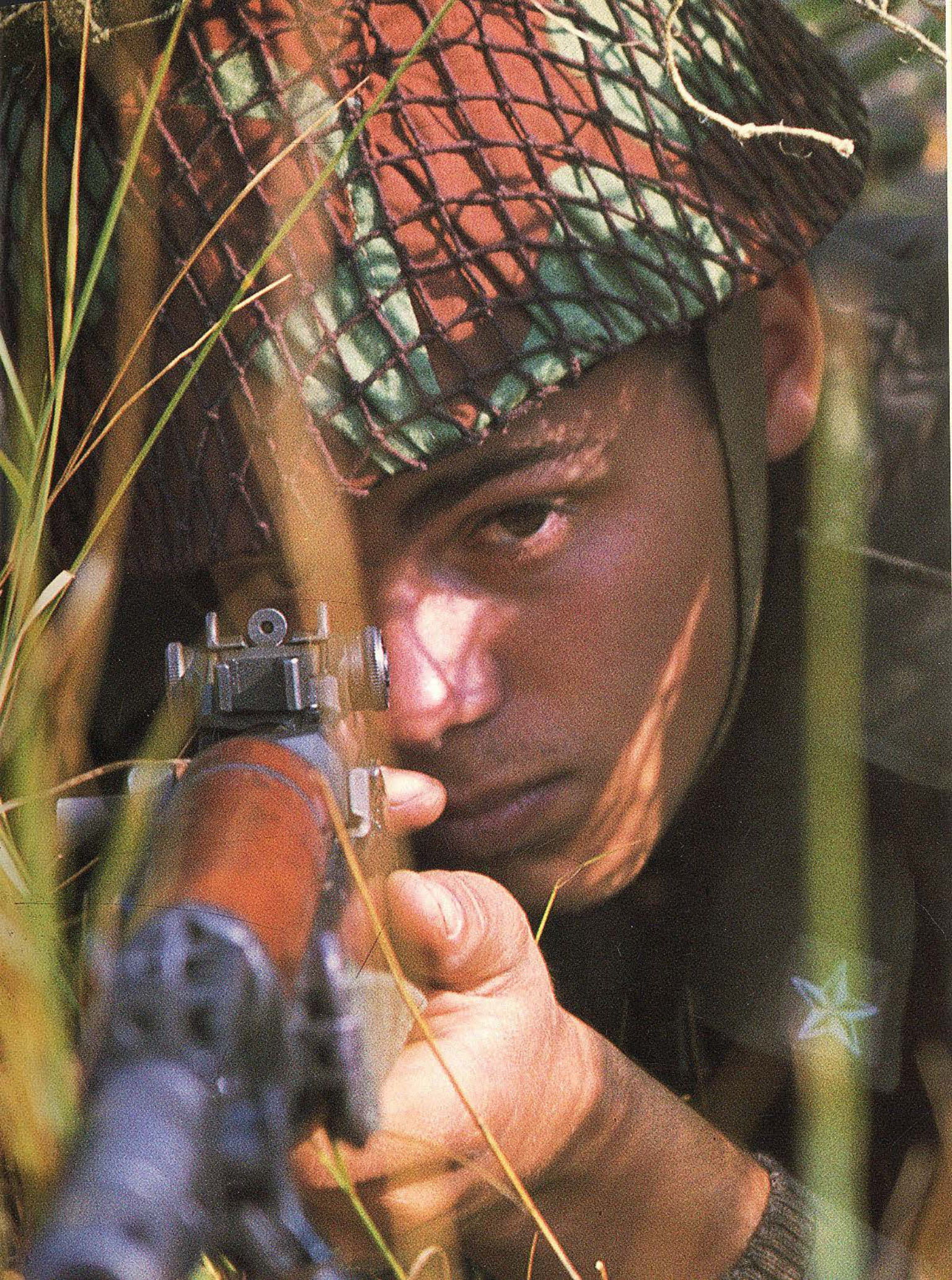
Below.

The "F 333 E", a new advanced-performance vehicle.

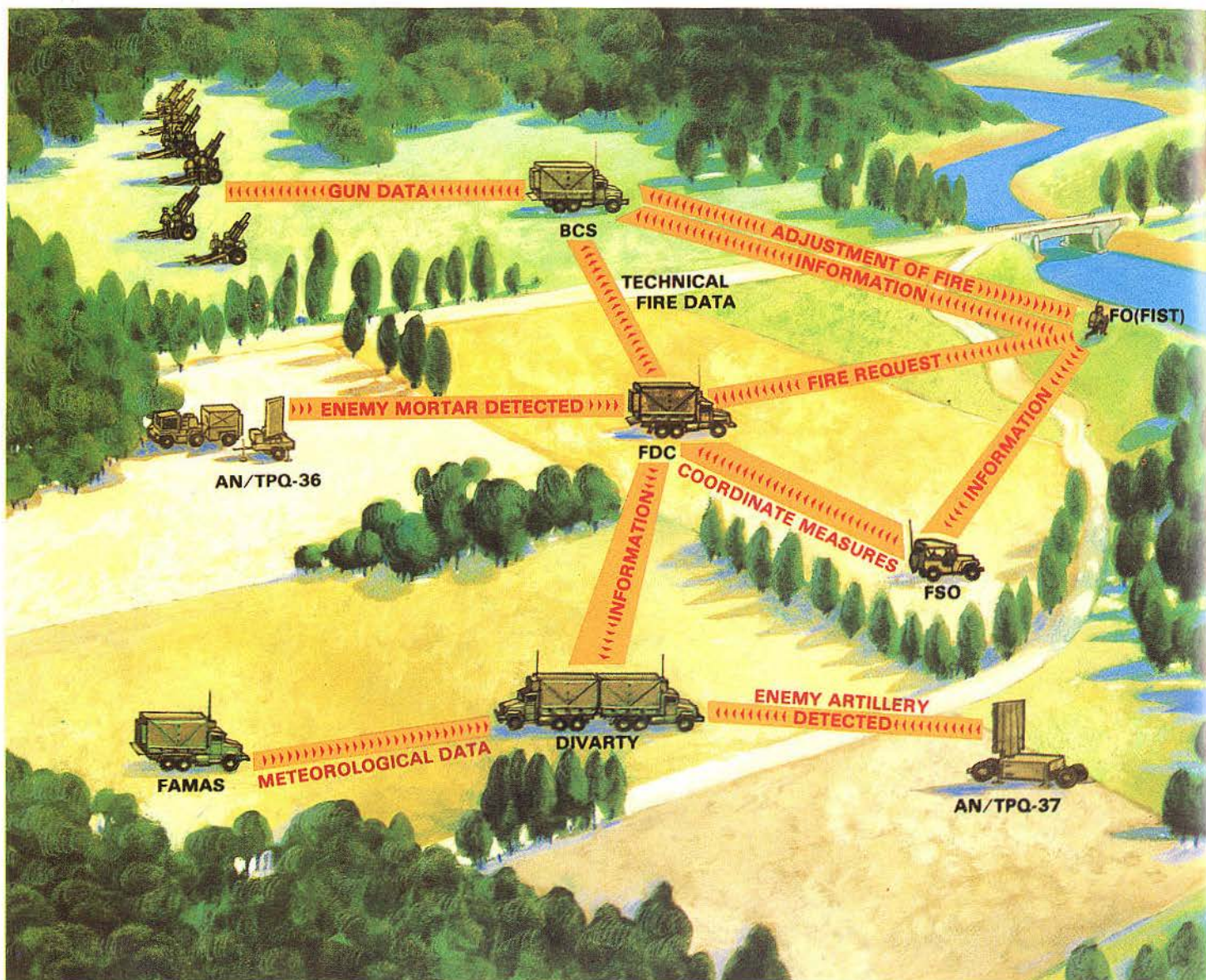
Right.

An infantryman in training.





FIRE SUPPORT



deemed necessary on the particular occasion.

Each of these teams should have the following characteristics:

- limited per-unit cost, in order not to be a remunerative objective for the employment of shells with terminal-guided submunitions;
- limited size (three-four men, only one transport and combat vehicle);
- high mobility on wheels, acquired with the employment of

vehicles such as ATMPs (*All Terrain Motorized Platforms*);

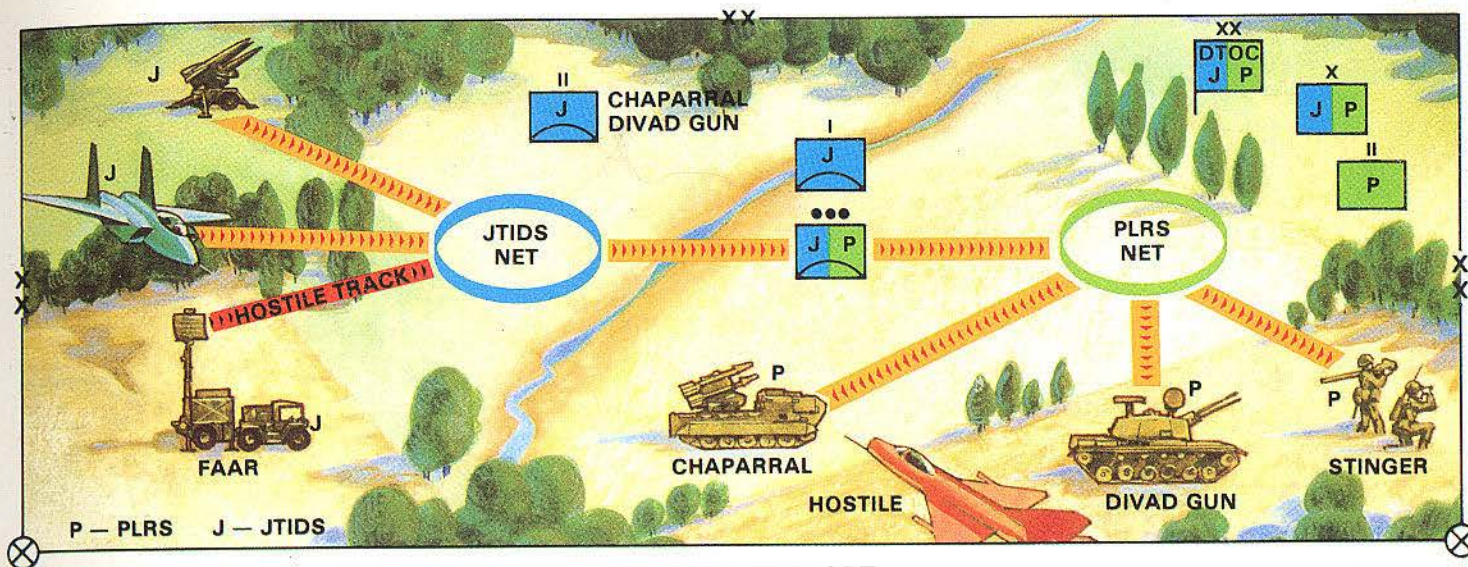
- possibility to identify and be identified, to continuously know their own and their friends' position and to predetermine the itineraries to be followed through IFF (*Identification Friend or Foe*) and SIF (*Selective Identification Feature*) systems (14);
- antitank and anti-infantry capability obtained with an antitank missile launcher or recoilless guns, one grenade launcher or assault mortar, and

Fire support is remarkably improved by the system's capability to distribute the fire requests of the forward observers simultaneously to several destinations.

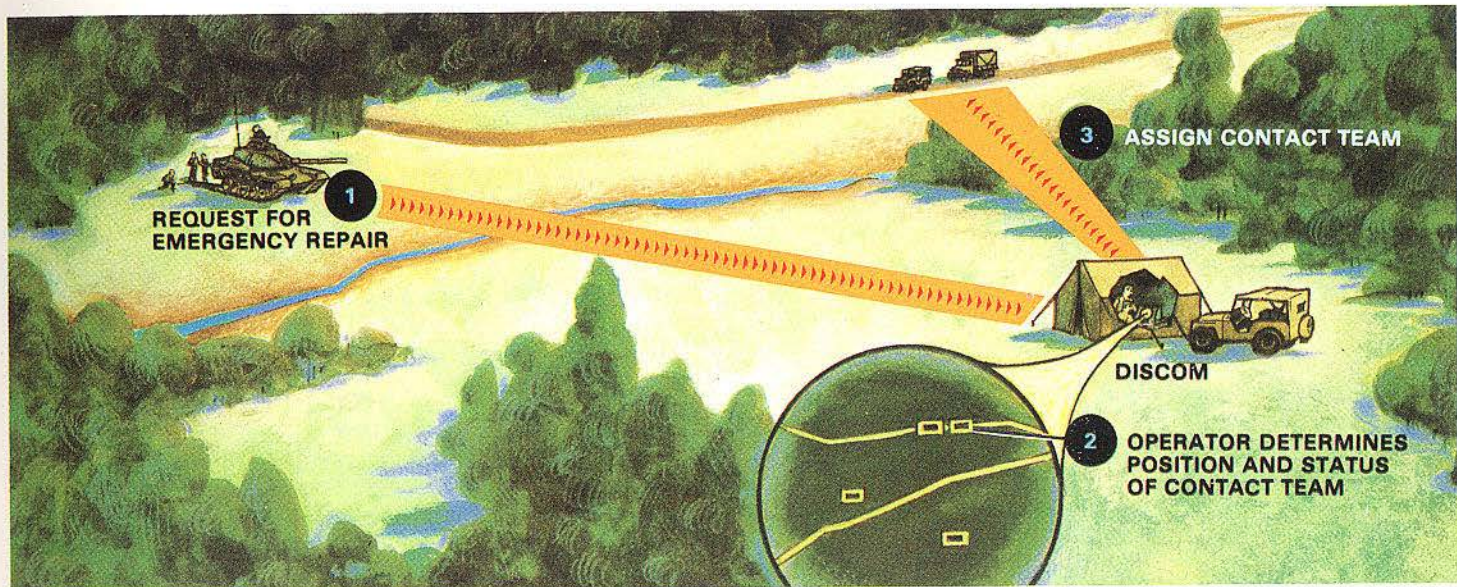
with a machine gun of a caliber fit for explosive rounds.

During the battle, these somehow modular units would also be entrusted with the task of supporting and complementing the defensive structures, in connection with the probable offensive efforts of the enemy, or to make up for a drop in their operativeness.

AIR DEFENCE



LOGISTIC SUPPORT



Consequently they should be supplied with machines for the construction of field shelters (trenches, ditches, etc....), in order to make them able to fight a static battle.

The accomplishment of this most important task, made possible by the availability of SIF and IFF systems implies in any case a specific training, aimed at overcoming the difficulties deriving from redeployment or even only from the task of supporting units already engaged in combat. It is not suitable

Top

A key factor for air defence operations is represented by an automatic command and control information sending net. As the sketch shows, the sistem's ability to constitute a data communications net, together with a real-time IFF function, greatly enhances the effectiveness of air defence systems.

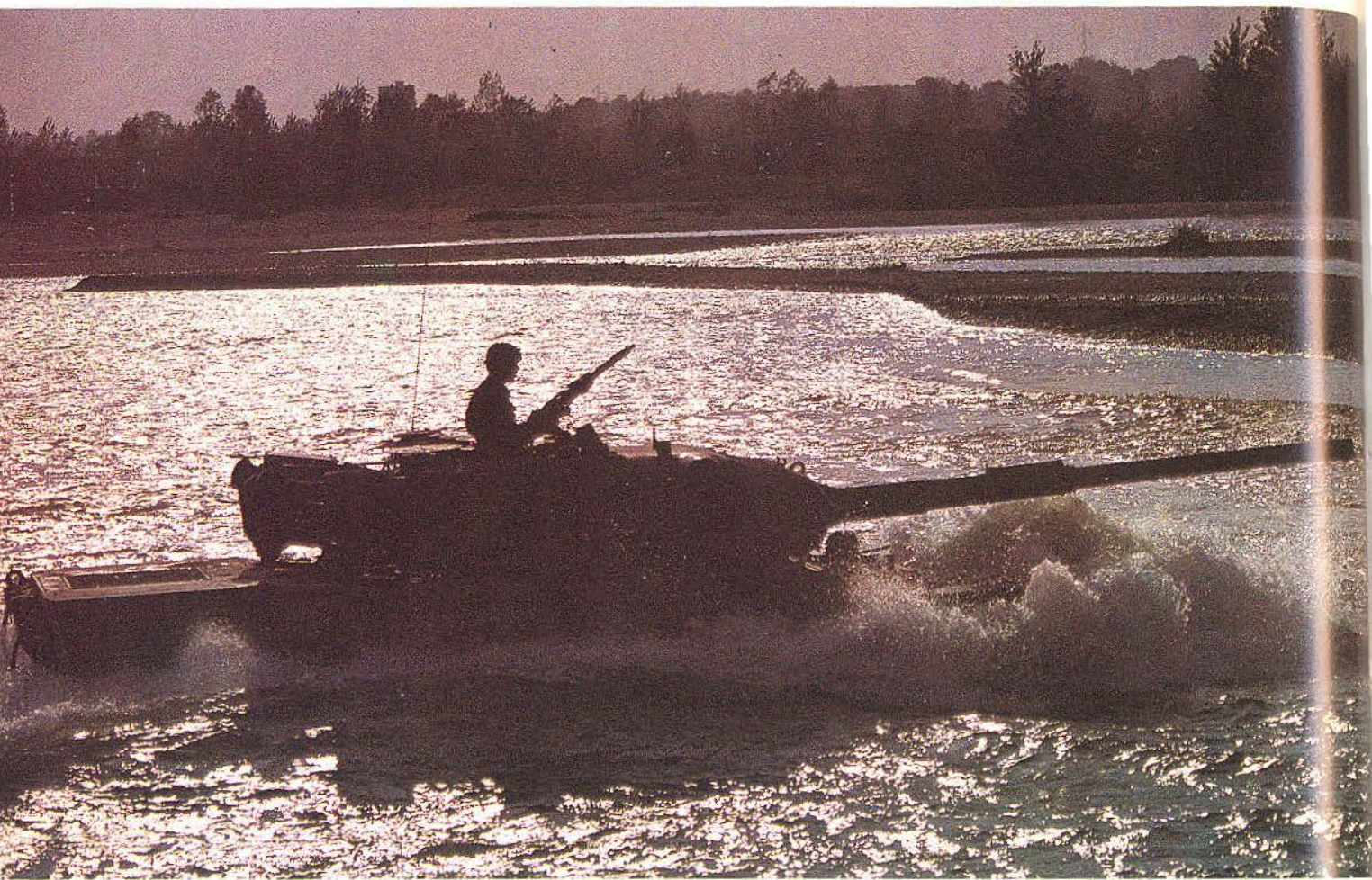
here to deal with it analytically, but it is important to point out that this training should concern both the "line" and the "chasseur" units, in order to be sure to obtain the certain

Above.

The functions of data transmission and determination of positions play a crucial role in the operations of logistic support. The sketch shows a broken-down tank requesting assistance from the Division Logistic Command, which marks the position of the vehicle and that of the liaison groups, and then directs one of them to the damaged tank.

and instant "homogenization" of the two instruments.

The modes of execution of the training activity should stem from experimental training cycles started ad hoc, from



which one could also derive the elements of the doctrine of employment to be used at the lower organizational level.

It should also be specified that, especially for the light units engaged inside the position of resistance, it is commonly believed that the component for anti-aircraft defence could be reduced to a minimum, if not completely absent, due to the fact that they could benefit from the coverage provided by the units already deployed.

Finally, there should be units specialized in fighting in particularly compartmentalized areas.

The bulk of these units, especially shaped, equipped and trained for developing a defensive combat in urban centres, wooded areas and in general in the difficult-progression areas present in their sector or responsibility,

should be an organic part of the "line" elementary Major Units.

The remaining units, much more mobile in order to permit the support or replacement of the first ones, together with the units charged with the elimination of infiltrations and the carrying out of interdiction, would instead be placed under the operational control of a Commander immediately subordinate to the complex Major Unit responsible for the defensive battle.

This organizational solution would permit, among other things, to emphasize the principle of the economy of forces.

More than speaking about the armament and equipment of the forces assigned to combat in heavily compartmentalized areas, it seems important to envision the recruitment of the personnel needed to man them.

The common opinion is that – better than any other solution – regional recruitment, and therefore regional mobilization, would answer the purpose perfectly.

The units would actually be made up exclusively by highly motivated personnel, who would know the environment well and could be promptly mobilized.

CONCLUSION

It seems possible to exclude a global war with the employment of nuclear and biological weapons.

As a matter of fact, such a war escapes any political and strategic logic, for it would bring about the destruction of all resources of the belligerents and perhaps of the whole mankind.

Left.
"Leopard" tank wading a ford.

The large-scale adoption of deadly and very accurate launchers and weapons, together with systems for target acquisition and command/control capable of managing reactions in real time, is at hand, and equally at hand is the acquisition of large quantities of modern and technologically advanced equipment.

The confrontation and perhaps the clash of opposing wills will therefore be initially developed on the plane of technological achievements.

But after the electronic war, the air and naval battle, the duel between modern artilleries – or at the same time – the dispute will be, once again, settled by the infantrymen.

Therefore, if our analysis has been accurate up to this point, it would be expedient to make the necessary provisions and start making the relevant changes to the doctrine and instrument as soon as possible.

The model of development, according to which the instrument has been shaped – particularly the infantry model, chosen and started in 1975 together with the restructuring process – being related to an operational environment that has undergone deep changes, will not be able to maintain its validity for a long time.

Moreover, the problems connected with these changes will have an evolutionary trend that will not allow partial solutions, to be pursued by gradually taking the organizational and doctrinal measures that could become necessary in order to fill the by then all-too evident deficiencies. It is certain, in fact, that they would show up with an exponential time progression and the ensuing ratio between the provisions to be made and the time necessary for their implementation would become unbearable.

The difficulties will be enormous, especially in

changing the conceptions and mentality associated with the armoured combat and rooted in the current professional military culture.

The difficulties encountered between the two World Wars in replacing the horse with the tank, described by B.H. Liddell Hart (15), will have to be met again when it will be a matter of replacing, in defensive operations, the armoured combat with that, just outlined, of the light infantry.

It could perhaps be convenient, therefore, in order to make a painless transition, to revise the doctrine, singling out the infantry units, for example one battalion from each mechanized and Alpine Brigade, which, equipped with the necessary means, could start experimenting a specific training in the roles previously mentioned.

Moreover, while waiting for the necessary equipment, it would not be useless to start training using imagination as much as possible... there is nothing to be ashamed of: General Guderian trained his troops with makeshift cardboard tanks... and the results of his "trick" are very well known.

Aldo Limoncelli

NOTES

1) Capt David H. Petraeus, U.S. Army, "Military Review", December 1984: "Light Infantry in Europe: Strategic Flexibility and Conventional Deterrence"; it presents, together with the bibliography listed in the notes, a summary of the subjects considered and the most common options for solving the problem.

2) C.N. Donnelly, "International Defense Review" 7/1985: "Soviet Tactics for Fighting in Built-up Areas, a New Look for the 1980s".

3) Lt. Col. Fabio Mini, "Rivista Militare" no. 6/85: "Grid Defence".

4) Lt. Col. Antonio Cicalò, "Rivista Militare" no. 6/79: "L'impiego di unità corazzate in aree urbanizzate". Already seven years ago the Author painted an almost prohibitive picture of the employment of armoured units – with their typical procedures – in the probable terrain of operations.

5) Superintendent of Documents, U.S. Government, "Soviet Military Power

1985" – Chapter IV, Surface Forces; James Moray Stewart, NATO Assistant Secretary for Plans and Defence Policy, "NATO Review", no. 3/85 – "Improvement of conventional defence: what is the Alliance's aim?".

6) From the lecture given in Rome, on June 18, 1985, at the 36th Session of the Centre for High Defence Studies, by Adm. Vittorio Marulli on "Programming and building a Navy".

7) From the lecture given in Rome, on June 14, 1985, at the 36th Session of the Centre for High Defence Studies, by Gen. Basilio Cottone, IAF, on "Technological evolution and its influence on the structure of the Armed Forces".

8) Maj. Gen. Luigi Ramponi: "Rivista Militare" no. 6/85: "Artillery".

9) Maj. Gen. Antonio Viesti: "Rivista Militare" no. 4-85, It. Ed.: "Finabel. Today's and Tomorrow's Reality".

10) Publication 712 of the doctrinal series: paragraph 35.

11) Col. Mario Buscemi: "Rivista Militare" no. 3/80, It. Ed.: "Light Infantry".

12) Col. Giovanni Giostra: "Rivista Militare" no. 5/84; It. Ed.: "Paratroops in counterinterdiction".

13) Giovanni Ludi: "Difesa oggi" no. 89/85: "Le Bourget 85: l'armamento aereo". In the chapter devoted to dropping, saturation and self-propelled weapons, it gives a general outline of the present or forthcoming capabilities of stopping and destroying armoured formations.

14) An example of the capabilities of these identification systems is given by the Position Location Reporting System (PLRS - AN/TSQ 129) of the Hughes Aircraft Company, Ground Systems Group.

15) B.H. Liddell Hart: "The Art of War in the 20th Century".



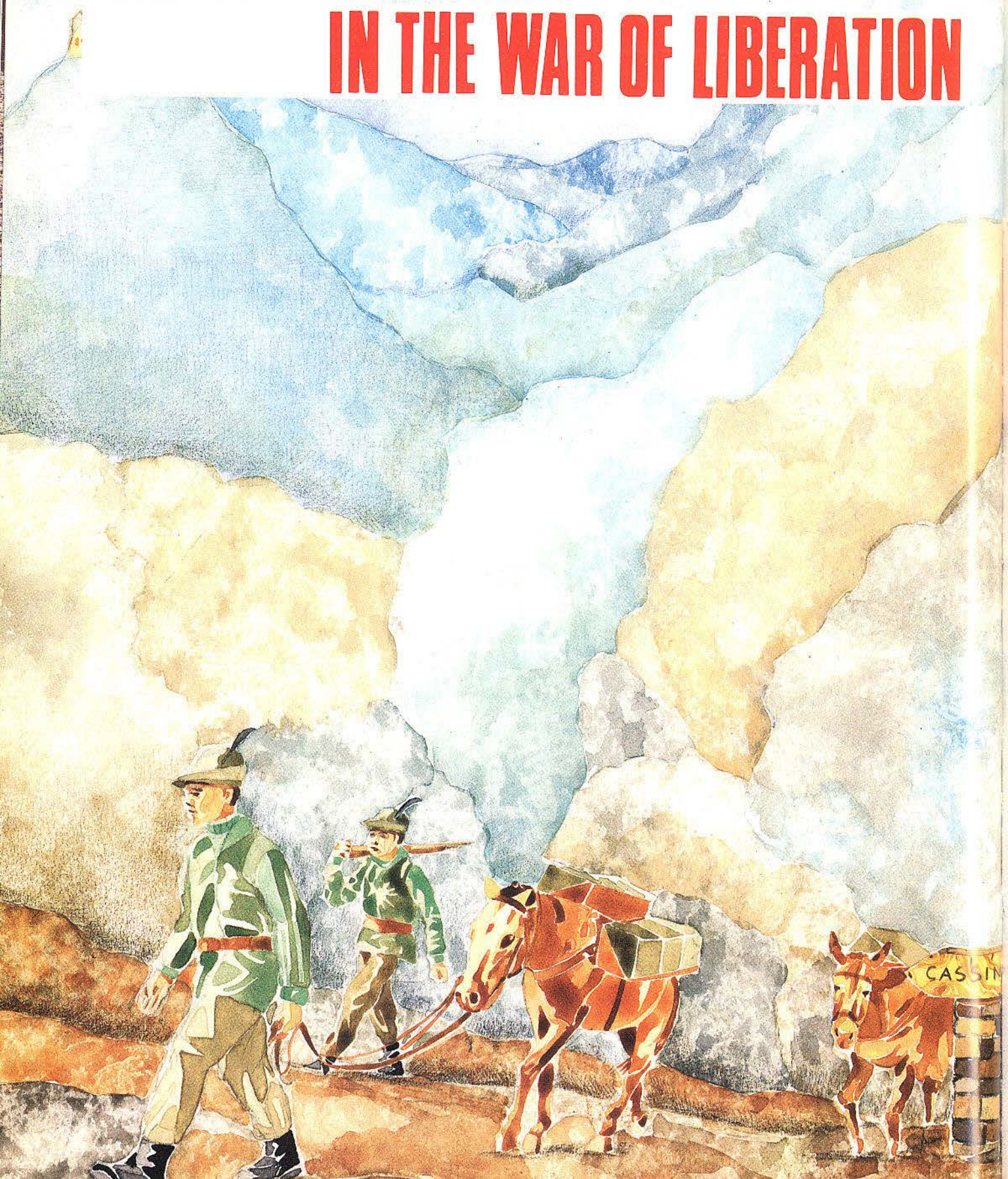
Lt. Col. Aldo Limoncelli has attended the Military Academy and the Service Branch School.

He has been Platoon and Company Commander in the 23rd Bersaglieri Battalion "Castel di Borgo"; Chief, Operations, Training and Information Section, 3rd Bersaglieri Battalion "Cernaia"; Staff Officer, Ops and Tng Branch, Hqs. 5th Army Corps.

Lt. Col. Limoncelli has attended the 106th Advanced Staff Officers Course. At present Lt. Col. Limoncelli is a Staff Officer at the Regulations Branch of the Army General Staff.

THE AUXILIARY UNITS

IN THE WAR OF LIBERATION



THE 210TH INFANTRY DIVISION

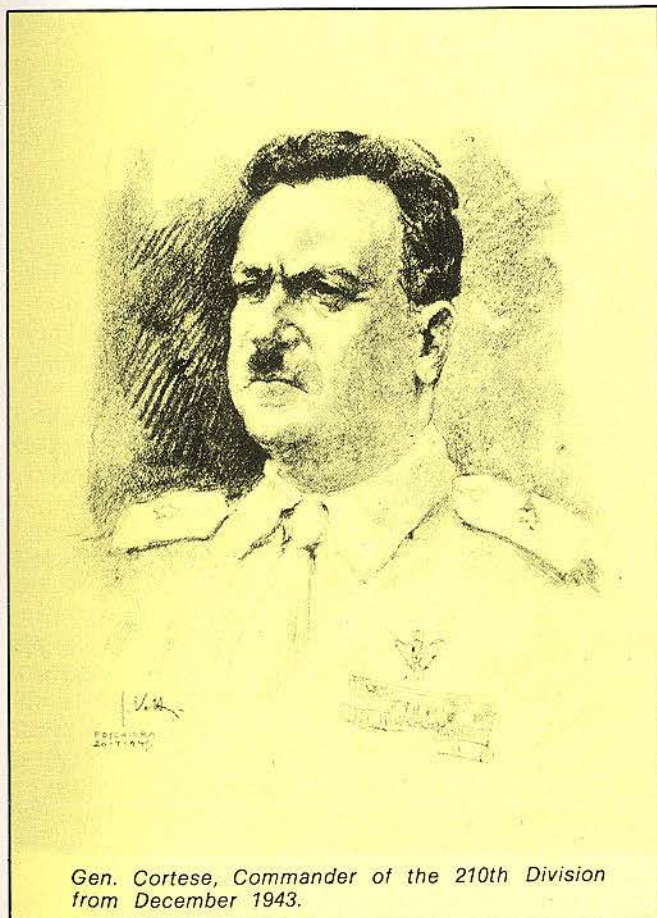
The written citation awarded to the 210th Division by Gen. Truscott, Commander of the 5th Army (1), at the end of the campaign and handed over personally to the Division Commander, Gen. Cortese, on July 25, 1945, during a solemn ceremony at Peschiera, is the most convincing witness of the important role played by this Division during the entire war of Liberation.

The participation of the 210th Division in the Italian Campaign, apart from the prevailing logistic character of this Major Unit – not devoid, on the other hand, of undoubted and amply acknowledged "combat" features – in fact was not limited

to a few months, but lasted almost twenty months (September 8, 1943 - April 25, 1945), sixteen of which, without interruption, with the 5th Army. Its employment was neither sporadic nor episodic, i.e. in connection with a particular battle, but went on during the entire Campaign from south to north, from Puglia to the Po Valley; the Division changed headquarters no less than 16 times, from Monteroni to Peschiera, through Oria, Brindisi, San Giovanni a Teduccio, Caserta, Montanaro, Terracina, Anzio, Tarquinia, Tuscania, Montepescali, Palone, Tavernelle, Florence and Modena (see chart 1), giving the American 5th Army a constant, massive

and decisive support during the operations.

So much so that the Command of the 5th Army, after an initial period of indifference and distrust, did not hesitate, during its northward advance along the Peninsula, to express more and more openly its appreciation for the units of the 210th Division, together with the conviction, which was becoming increasingly clear, of the indispensability and irreplaceability of this Division within the 5th Army. Witness of this is the abovementioned citation, in which Gen. Truscott acknowledges in clear words that the 210th Division "... contributed immeasurably to the success of the 5th Army..."



Gen. Cortese, Commander of the 210th Division from December 1943.

Headquarters

FIFTH ARMY

COMMENDATION

To all whom it may concern

The 210th Italian Division (Adm.)

is hereby commended for outstanding performance of duty

CITATION

Beginning on Dec. 1943 and continuing throughout the Italian campaign, the 210th Italian Division (Adm.), overcoming all obstacles of terrain, extreme conditions of weather, and every other difficulty with which it was faced, distinguished itself by outstanding performance of every assigned mission in support of combat operations of the 5th Army. Its accomplishments contributed immeasurably to the success of the 5th Army and are worthy of the highest praise.

L.K. Truscott Jr.

*Lieutenant General, U.S. Army
Commanding*

CHART 1

MOVEMENTS OF THE HQS. 210TH DIVISION FROM PUGLIA TO PESCHIERA



clear signs of rejoicing. The Division Commander, acting on his own initiative, orders that the utmost discipline be maintained and officers and troops be ready for any event" (5). On September 9 at 9 a.m., Gen. Ranza, Commander of the 4th Air Corps (Bari), phones Major Nini, Chief of Staff of the Division, informing him of the urgent need to keep the San Pancrazio airfield in working conditions, as the Germans, who are about to withdraw, are planning to blow up its runway. "... The Division Commander orders that this act of sabotage be prevented at all costs and dispatches Gen. Vannini, Division Deputy Commander, to the airfield with some units (6).

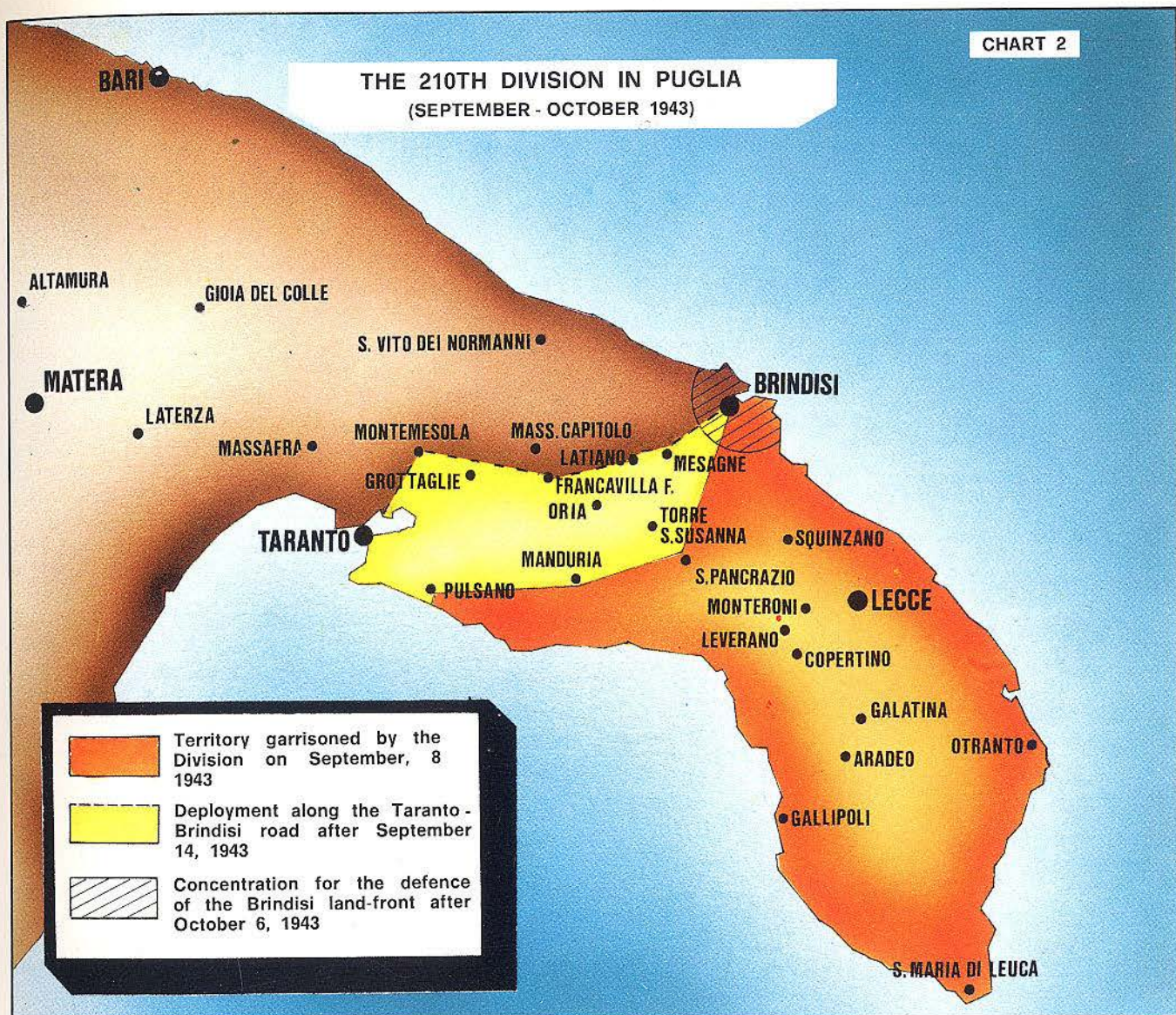
This resolute attitude induces the Germans to negotiate and the runway remains undamaged. The Germans withdraw heading north..." (7). Still on September 9 the "Vulcania", a dredging ship, is sunk by two German minesweepers. The Italian coast batteries open fire and the German units, presumably hit, leave the area. Again on the same day at Aradeo, south-west of Galatina in the province of Lecce, a German train loaded with ammunition is stopped and its escort are captured. Only on September 10, at 1.50 p.m., the Division Headquarters receives a message from the Commander of the 9th Corps, Gen. Lerici, ordering to react against the German units, applying "Memory 44" (8), but adding "...everything possible must be done to avoid provoking hostile acts by the Germans, stop, give assurance, stop" (9). On September 11, at last a clear and concise message arrives: "By order of Supreme Command Germans are enemies". But the Commander of the 210th, on September 8, had already acted in that direction on his own initiative, without awaiting the belated and sybilline order of his Army Commander. Moreover it must be considered that the declaration of war on Germany came only a month later. Still on September

THE 210TH DIVISION AND THE 8TH OF SEPTEMBER 1943

The 210th Infantry Division, Major Auxiliary Unit in the Campaign of Liberation, existed already before September 8, 1943 as a Coast Division (2). It was part of the 9th Corps (Gen. Lerici) of the 7th Army (Gen. Arisio). The Division had its Headquarters at Monteroni, was responsible for the defence of the stretch of coast (about 325 km) from Brindisi to Porto Cesareo. The Division (15,000 men) consisted of three coast regiments (113rd, 114th, 164th) each with a strength of 4,000 men divided in five battalions (800 men), one artillery regiment

(16th), 16 paratroop sections and various services. It must be underlined that it was a stationary Major Units, lacking transportation like all other coastal Major Units (12 Divisions and 3 Brigades).

In the morning of September 8, the Division Commander, Gen. Colonna (3), issues the order to change the deployment, in other words "... to reduce the forces on the coast, concentrating the units towards the interior..." (4). At 8 p.m., the radio broadcasts the unexpected announcement of the armistice. "At some units, the troops, which at first had the feeling that all hostilities had come to an end, have given



11, the Division Commander issues a circular, ordering that "the units must now give up their 'coastal mentality', assume that of mobile units... and ... quickly acquire the 'unit spirit', reaching the form which must animate the attack units... it is necessary, in short, to give a soldierly imprint to our infantrymen, who for many years have been isolated on the coast, charged with a task certainly no less onerous but which has determined static capabilities and attitudes..." (10). On September 14, the Division, whose headquarters are transferred from Monteroni to Oria, is entrusted with the defence of the Taranto - Brindisi road (see chart 2) along the line

Montemesola - Francavilla Fontana - Latiano - Mesagne, leaving two battalions to garrison the ports of Gallipoli and Otranto. On September 15, it becomes part of the 51th Corps (11). On October 6, having overcome the situation requiring, as a precautionary measure, the abovementioned deployment, "the Division, with Headquarters at Brindisi, is ordered to concentrate around the town for the security of the land-front"; it must be remembered that, meanwhile, the King and the Government had arrived at Brindisi.

This is the description of the most important events. The behaviour of the 210th on September 8 and on the following

days gave ample proof of the quality of the Commanders, the moral solidity and efficiency of the whole Division. There never was a lack or scarcity of command. The Division Commander had no doubts or uncertainties about carrying out the orders which, in some way, were actually anticipated. Everyone stuck to his place.

The attitude towards the Germans was clear. The Command issued orders which were promptly obeyed by all subordinate units, down to the smallest ones. In short, the Division "held out". The merit can be ascribed to the whole unit, without distinction, to those who gave the orders and to those who carried them out.

ORGANIZATION OF THE 210TH INFANTRY DIVISION AS OF MAY 11, 1944

67TH - 525TH - 548TH INFANTRY REGIMENTS
with the following subordinate units:

2nd Bn, 567th Artillery Regiment
23rd Eng Bn (Pioneers)
103rd Eng Bn (Miners)
910th Eng Bn
1004th - 1005th Transportation Companies
1st and 2nd Platoons for U.S. Artillery Bns
1st Field Malaria Control Platoon
810th Radio Control Platoon
110th - 130th - 210th Mule Infirmaries

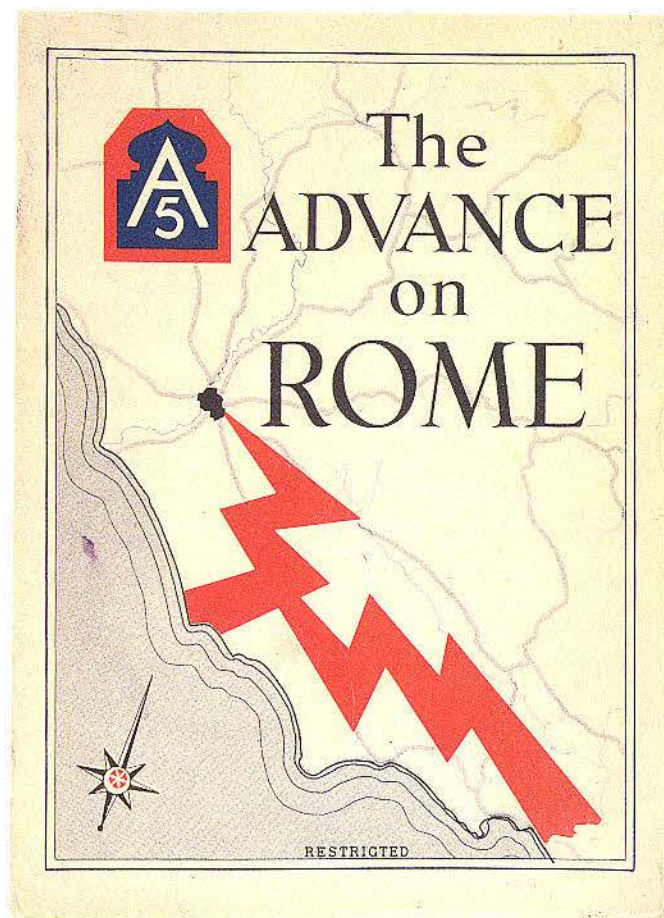
20TH MULE-TRAIN GROUP

1st Unit "Gennargentu"
2nd Unit "Piemonte"
5th Unit "Monte Cassino"
9th Unit "Lancieri di Novara"
10th Unit "Valdieri"
11th Unit "Lancieri di Firenze"
Mule-Train Training Centre

525TH - 865TH FIELD HOSPITALS

SERVICES

Total: 400 officers
10,000 other ranks
1,700 mules



THE 210TH DIVISION AND THE U.S. 5TH ARMY

On November 18, the 210th changes its denomination from "Coast Division" to "Infantry Division". On December 15, the Unit is transferred to the Command of the Campania Armed Forces (12) and in January 1944 is assigned to the 5th Army (13). The order's short text is: "HQ 210th D.It. attached to 5th Army Special Troops for supply and operations only (14)". The order was well accepted, so much so that the Chief of Staff of the Division repeatedly declared that "the assignment to the 5th Army was our salvation".

But changing name, subordination or tasks is not enough. The 210th, at the beginning of 1944, in order to give the Allies the contribution they expect from it, must indeed undergo much greater changes. The Division must reorganize, i.e. it must acquire a structure adequate to the tasks

it has to accomplish. The individuals must come around to new ideas and acquire a completely different outlook, far from the one typical of the coast divisions. And the Division, with firmness and determination, between January and April 1944, tackles and incredibly solves the fundamental problem of restructuring itself and, after that, of acquiring a new moral unity.

"Incredibly" – it must be stressed – because it attains its goals, despite all obstacles, two of which, in particular, could then appear unsurmountable. The first was of a military nature and had its hard-to-eradicate roots in the limited authority of the Italian Staffs and

Commands over their units, for the authority was mostly attributed to the Allies, in accordance with the terms of the Armistice; the other was that of the "absences without leave" for which all the political and military authorities, both Italian and Allied, without distinction, can be considered responsible (15).

The reorganization takes place anyway. During that period, a real carousel of units takes place within the Division, with the result that at the end of April 1944, after several changes, none of the units existing in September 1943 remains with the Division. The three Infantry Regiments (113rd, 114th and 164th), the 16th Artillery Regiment and the 16 anti-paratroop sections are replaced by three different infantry regiments (67th, 525th and 548th), one artillery battalion, three engineer battalions and one mule-train group consisting of 6 units, with as many as 1700 mules. With this new

Cover of the classified monograph, published by the US 5th Army at the end of the operations which led to the liberation of Rome.

The 210th Division participated in the advance from the Garigliano river to Rome, and one of its units, the 548th Infantry Regiment, took part in the landing at Anzio.

organization the Division participates in the battle of Rome, giving proof of its qualities, as witnessed by the citations awarded to its units.

This first phase ends with the entry into Rome (June 7, 1944) of a company in arms, with the band and colours of the "Legnano" 67th Infantry Regiment. In the summer of 1944 the Division is transferred from Rome to the Florence area. It must be remarked that the transfer of all the mule trains is carried out on foot. While the subordinate units are transferred, the Division Headquarters concentrates all its activity on the acquisition of an increased efficiency: it is interesting to see how in this period, through an actual "epistolary bombardment" it tries to obtain, from the higher Commands, both Italian and Allied, all that was considered indispensable in view of obtaining the maximum efficiency of the units. The informality of expression that can be noticed in the letters addressed to the Italian and American Commands, unusual in office correspondence, can be explained not only with the urgency of the needs represented but, above all, with the moral conviction felt by the Headquarters that its units were earning, with their unrelenting work, the right to have those needs promptly satisfied.

In the autumn of 1944, the Division is employed on the "Gothic Line", deployed on a large area of 4,000 square kilometres. Four additional mule train units are assigned to it. The General Staff of the "Regio Esercito" orders the establishment of the 20th Mule Train Group and the 210th Engineer Regiment. The number of mules increases from 1,700 to 2,800. The Division stands also this test brilliantly, as evidenced by the losses it suffers and the "combat" qualification attributed to the 210th Engineer Regiment and to the 20th Mule Train Group.

During the winter pause the Division continues to improve its

ORGANIZATION OF THE 210TH INFANTRY DIVISION AS OF MAY 2, 1945

67TH INFANTRY REGIMENT "LEGNANO"
(301st - 302nd - 306th Q.M. Bns) (*)

548TH INFANTRY REGIMENT
(303rd - 304th - 305th Q.M.) (*)

525TH INFANTRY REGIMENT "TRAINING"
(1st Bn Mule-Train Tng - 2nd Bn Transport Engineer Tng)

6TH GUARD REGIMENT
(511th - 512th Bns)

20TH GROUP COMBAT MULE-TRAIN
1st Bn ("M. Cassino" - "Valdieri" - "M. Belvedere")
2nd Bn ("Piemonte" - "Montecuccoli" - "21st unit")
3rd Bn ("Gennargentu" - "L. Novara" - "Sassoleone")
4th Bn ("M. Battaglia" - "18th and 20th units")
5th Bn ("L. Firenze" - "M. Rùmici" - "19th unit")
110th - 130th - 211th Mule Infirmaries

210TH GROUP COMBAT ENGINEERS
23rd and 103rd Eng Bns
1st and 2nd workshop companies
Eng Depot Companies (six)
210th Topography Platoon

SERVICES

210TH MOTOR POOL
152ND MEDICAL SECTION
525TH - 865TH FIELD HOSPITALS
210TH SUPPLY SECTION

Total: 600 officers
17,000 other ranks
4,000 mules

(*) With the following subordinate units:
1022nd - 1023rd Transportation Companies
1st and 2nd Telephone lines recovery Companies

organization and is further strengthened through the reorganization of the three infantry regiments and the establishment of another five mule train units. A total of fifteen units is thus reached, grouped in five battalions, with over 4,000 mules. New food rations are distributed and several welfare initiative are taken (16). Equipment for transportation and work, reconditioned but in numbers adequate to the needs, is assigned to the unit. These are trifles if compared with the equipment of the Allies, but for the Division's units, which had started with nothing in the previous winter, they represent an almost un hoped-for progress. The Division's weekly,

"La 210^a Divisione", founded at that time, publishes no less than 23 issues (17). Sculptor Sergio Vatteroni, an artillery captain on duty at the Division Headquarters, designs a medal for the division, one for the mule-train groups and one for the 5th Army.

The direct participation of the 210th Division in the final battle can be summed up in the employment of the fifteen mule-train units in the first phase of the battle, during which some of them captured prisoners, arms and ammunition. The engineer battalions are mainly employed for building and repairing bridges, both on railways and roads. A Division medical unit crosses the Po river

Women Assistance Corps (C.A.F.)

Since the spring of 1944, after the Americans' entry into Rome, on many occasions there had been insistent requests on the part of many women to serve with the Italian units which were participating in the Campaign of Liberation side by side with the Allies. This aspiration, which wanted to realize in the reborn Italian army something which war already done in the Armed Forces of other countries, was not taken seriously at the beginning, perhaps because the mentalities were still unprepared for it, until one day it landed on the desks of the General Staff of the "Regio Esercito" and the War Ministry. After careful and long studies, the General Staff, overcoming all the various difficulties - material and otherwise - which interfered with the initiative, succeeded in satisfying this aspiration. Thus the General Staff of the "Regio Esercito" ordered the establishment of the "C.A.F. - Corpo Assistenza Femminile". The Corps was formed by voluntary women who wore a light-hazel dress with brown leather shoes and handbag. On their left arm they had a small Italian flag with the initials of the Corps. At the end of April 1945 - too late, unfortunately - the War Ministry assigned some C.A.F. representatives to the 210th Division. Leader of the group was Countess Flavia della Gherardesca. One of the girls' tasks was that of visiting all the Divisions' units with two mobile canteens, which they called "carrozzoni" (the wagons). They started at once and with enthusiasm their activity, which was undoubtedly useful and appreciated also because the Division, though in a phase of progressive demobilization, continued to live for another six months. This is an unknown page which, in the present period when many are trying to involve the "gentle sex" in the military, shows that during the War of Liberation there was already a women military service in the Italian Army, albeit of modest dimensions and with particular characteristics.

SALUTE OF THE C.A.F. REPRESENTATIVES TO THE SOLDIERS OF THE 210TH DIVISION

"Our tricolour ribbon is not enough" - we thought - "we should wear a flag on our forehead, so that our soldiers can recognize us!"

Actually, in the first encounters during the journey, and also here, all had difficulties in recognizing us as Italians. On the other hand, this surprise is more than justified. We are among the first Italian women to wear this type of uniform and the very first

to wear on our arms the words "Corpo Assistenza Femminile".

We would like to say that we are proud of it, but this is made difficult by our sorrow that, only now, at the end of the war, we are permitted to come to the side of our brave soldiers. We have been waiting months and months. And we feel we have to tell you this, because you shouldn't think that until today we have not cared about you.

On the contrary, when our gallant soldiers started to fight for a just cause in the Italian Army of Liberation, against the Germans and the Fascists, many women and girls of Southern Italy, spontaneously offered to help them in every way, even if the possibilities were limited.

In Rome, for example, we prepared packages for the injured, and delivered them personally. Even now we organize entertainments, on Sundays we visit the soldiers at the nearby training camps. When we cannot do this, we talk and think about you as the

true defenders of our country, and therefore of all our families.

May the soldiers of the 210th Division receive, from these six girls who try to express all the gratitude and affection that everyone feels for them, the warmest greetings, in the hope of getting to know all of you.

WELCOME TO THE C.A.F.

Some months ago, groups of Italian women requested to be assigned assistance tasks with the operational Armed Forces, as is done in other countries.

Various delays, due to material difficulties, have retarded the implementation of this welcome initiative.

A few days ago the first two mobile canteens which the Ministry of War has assigned to the 210th Division have begun their activity.

The "210th", on behalf of all units, salutes with a grateful heart the kind representatives who have volunteered for this deed of national fraternity.



Anno I - N. 12

SETTIMANALE DELLA 210^a DIVISIONE

P. M. 179 - 29 Aprile 1945

La Germania ha chiesto la resa incondizionata?

La comunicazione di Himmler

La "Reuter" comunica:

Si dichiara da fonte autorevole che Himmler ha informato gli alleati occidentali che egli ha facoltà di trattare una resa incondizionata alla quale è personalmente favorevole.

La Gran Bretagna e gli Stati Uniti hanno informato coloro che hanno consegnato il messaggio di Himmler che una risposta di accettazione può essere fornita soltanto col consenso delle tre grandi Potenze Alleate.

Una rivolta in Baviera?

WASHINGTON, 28

Si ha da San Francisco che è pervenuta a Stettinus, Molotov e Eden la notizia che Himmler ha presentato questa notte al governo inglese e americano l'offerta della resa incondizionata della Germania.

Un corrispondente della "Reuter" ha comunicato inoltre che sarebbe scoppiata una rivolta a Monaco di Baviera.

Verso il Nord

Scrivere un articolo di fondo, di questi giorni, è una impresa altrettanto difficile. Gli avvenimenti si susseguono con rapidità che a noi che siamo rimasti inchiodati nella zona di frontiera, sembra incredibile. Bologna che pochi giorni fa era una meta agognata, l'obiettivo per cui si combatteva, è oggi lontana retrovia. Il Po, ripulzato, insensibilizzato dal nord inerte e catturando i ponti tedeschi, lasciando la nostra zona badiere alla via ombra di un sole quasi al tramonto e al mare per l'Italia.

Come le piume dell'Emilia, quelle di Lombardia oggi, domani certo quelle del Veneto saranno restituite alla libertà dagli eserciti alleati. E la Vittoria ormai, è l'epilogo della



Nel cuore della Germania

L'attacco invernale

Nord-Ovest

La freccia sovietica allungata

Le truppe del generale Patton hanno varcato la frontiera austriaca a nord di Innsbruck.

Le truppe tedesche occupano la zona di Berlino.

Il fronte di Berlino è stato occupato da truppe di stanza in Polonia.

Le truppe tedesche occupano la zona di Berlino.

Il fronte di Berlino è stato occupato da truppe di stanza in Polonia.

La 7^a e la 17^a Armata austriaca

possono in alcune ore di distanza di 10 km, e si trovano distanti da 10 km.

Monterebbia è stata raggiunta e le truppe che erano in via di marcia sono state arretrate.

La 19^a Armata austriaca si trova a pochi chilometri da Predazzo e ha chiesto la resa incondizionata.

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Above.

Peschiera. A group of officers of the 210th Division with a representative of the C.A.F. (Women Assistance Corps).

Left.

Page One of the weekly "La 210a Divisione", published by the Division Headquarters.

together with the American 10th Mountain Division.

On May 8, at midnight, hostilities cease on all European fronts. The Division Headquarters moves to Peschiera. Together with the end of the hostilities the disbandment process starts, entailing the first transfer of divisional units to other outfits (18). In the last four months preceding the complete demobilization, the units continue to work full time: closing-down and moving the Army depots, fencing and clearing the mined areas, repairing and constructing bridges, tending more than 4,000 mules. Even if the typical war risks are over, these activities have a rather high cost: 35 dead and 26 injured. These losses are

due for the greatest part to mine-clearing operations and to the particular intensity of motor transportations.

An interesting initiative, which regrettably came too late, is the constitution of the CAF "Corpo Assistenza Femminile" (Women Assistance Corps) decided by the General Staff of the "Regio Esercito". A group is employed when the Division is already at Peschiera and the war operations are over.

In mid July the demobilization process is hastened. The 20th mule train unit prepares groups of men to be transferred to the Combat Groups, the Cadres of the Division are assigned to set up the Headquarters of five Home Security Brigades (Turin, Milan, Bolzano, Udine, Bologna). On August 15, the 210th Brigade leaves the 5th Army and goes from the US-ITI to the ITI-ITI category (19).

On September 15, the Division Headquarters is transformed into a divisional Caretaker Office, which ceases its functions on the following October 15.

CONCLUSIVE CONSIDERATIONS

"The end of the hostilities did not find a passive or prostrate Italy but, to the extent allowed by the Allies, our soldiers were at their side, the patriots were committed to the same effort, all aimed at giving the most and the best of themselves for victory because, even if there was no willingness to grant us its concrete fruits, it was impossible to suppress the inner conviction that it was also our victory, conquered through the work of all, soldiers and citizens" (20). Thanks also to the 210th Division, for the role it played during the whole Campaign. The official figures evidence the amount of work done by the Division, which until May 31 has a strength of 17,000 men, decreased to about 15,000 men on June 30 and to 10,000 on July 31. During the sixteen months with the 5th Army, the unit supplies 3,500,000 days of work, equal to a daily uninterrupted employment of 7,500 men. The weight of the materials that were loaded,



Above.

Artist's view of the "Peace Bridge" on the river Po, built by 23rd battalion Combat Engineers.

Facing page.

Original model of the memento medal of the U.S. 5th Army, designed by Sergio Vatteroni.

unloaded and transported is approximately 3,000,000 tons.

The losses and the awards for valour bear special witness to the role played by the unit. The losses are greater than those suffered by each of the other auxiliary Major Units and Combat Groups, and are surpassed only by those suffered by the Italian Corps of Liberation: 260 dead, 640 wounded, 132 missing (21).

The decorations are represented by: 2 Military Orders of Savoy, 15 Silver Medals and 50 Bronze Medals for Military Valour, 33 War Crosses, 45 Solemn Citations, 800 Crosses for War Merit and 40 American decorations (38 Bronze Stars and 2 Legion of Merits). These are awarded during the already mentioned ceremony at Peschiera by Gen. Truscott himself who, in the speech delivered for the occa-

sion, addressed the 210th as "my Division". With these words he took away from the ceremony the cool formal character and expressed in a sincere and warm form the sentiments of esteem and gratitude which the Division, with its behaviour and the contribution offered, had earned from the Allies, from the Americans in particular. As a matter of fact, the Army would certainly have advanced along the Peninsula and reached the Po Valley also without the 210th Division, but undoubtedly it would have taken a longer time and the Allies would have had to employ more troops, with more difficulties and greater loss of human lives.

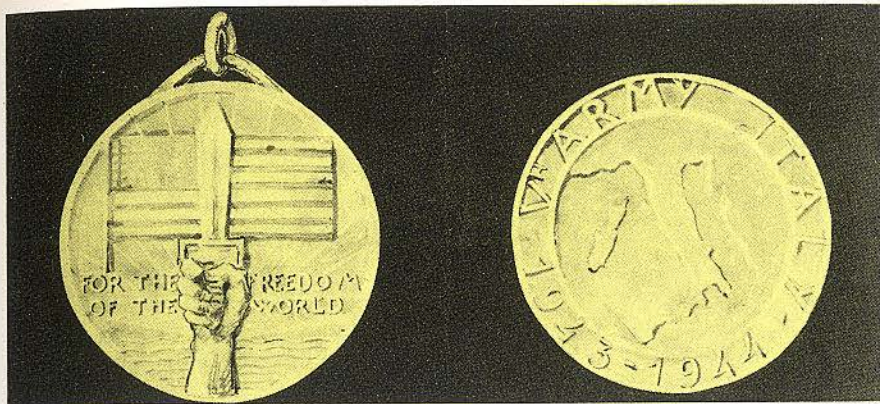
The reasons of the Division's conduct and efficiency are to be found in the moral solidity of the unit, in the valour of its troops and in the action of its Commanders at all levels. One should especially mention the "stature" of the two Commanders and the Chief of Staff of the Division: General Colonna, for succeeding in keeping the division together in the days that followed the 8th of September, General Cortese and Major Nini, who kept

the key jobs of the Division (the first for 20 months, from January 4, 1944 to September 15, 1945, the second for over two and a half years, from March 15, 1943, to September 15, 1945) and ensured a continuous action of command, always well coordinated and in harmony with the development of the situation, the spirit of the subordinate units and the expectations of the Allies (22).

Another element which was crucial in determining the conduct and the efficiency of the Division was its uninterrupted subordination to the same Command, that of the American 5th Army, for sixteen months.

No other Italian Major Unit can pride itself on an equally long period at the orders of one of the two Allied armies during the Italian Campaign: from this, perhaps, the Italian 210th Infantry Division derives the merit of being considered one of the emblematic units of the War of Liberation for having advanced, participating in every phase of the war, along the Italian peninsula, side by side with the 5th Army "from Puglia to the Po Valley".

Gen. Enrico Boscardi



NOTES

(1) General Lucian K. Truscott in July 1943 was the Commander of the 3rd Infantry Division with which he took part in the occupation of Sicily, in the operations on the Garigliano and in the landing at Anzio. After his promotion he was made Commander of the VI Corps and the Anzio beachhead. In the Summer of 1944, he went to Southern France with the VI Corps and distinguished himself in the swift advance towards the Valley of the Rhone. On December 16, when Gen. Clark replaced Gen. Alexander as Commander of the XV Army Group, he was appointed Commander of the U.S. 5th Army.

(2) Precisely from March 15, 1943, when the 210th Coast Brigade became a Division.

(3) General Raffaele Colonna, recalled from retirement, took command of the 210th Coast Division on March 15, 1943 and, having been discharged again, passed it on to Gen. Giuseppe Cortese on January 5, 1944.

(4) Historical Journal of the Headquarters of the 210th Division.

(5) Historical Journal of the Headquarters of the 210th Division.

(6) Strange as it may seem, two battalions of "Blackshirts" were sent there. They should have embarked at Taranto, bound for Tunisia. When the requirement was canceled, they were temporarily attached to the 210th Division where, in the days that followed the 8th of September, their conduct was exemplary.

(7) Historical Journal of the Headquarters of the 210th Division.

(8) The "memoria 44 Op" issued by the General Staff of the "Regio Esercito", after an introduction which considered "very probable" a German coup de main aimed at getting hold of all the Italian military and civilian levers of command, repeated, with more details, the instructions of document 111 C.T. which the General Staff had already issued on August 10, 1943 ("The truth about September 8", by Ettore Musco - Garzanti, 1965. Encl. 12 and 13, pages 215, 216, 217).

(9) The last sentence of the message meant that the subordinate Commands were held responsible for the consequences of any order given by them. One may ask if this, a few days later, could have had an influence on the destination of Gen. Lerici, Commander of the IX Corps, to a merely territorial Command.

(10) Historical Journal of the Headquarters of the 210th Division.

(11) The Command of the existing IX Corps on September 15, 1943 was given the denomination of Hqs. LI Corps (Gen. De Stefanis). Located at Brindisi, it continued to include the "Piceno" and "Legnano" Infantry Divisions, the 210th Coast Division, the XXXI Coast Brigade, the Brindisi and Taranto territorial Commands, in addition to all the troops coming from Calabria.

(12) The Armed Forces Command of Campania was given to Gen. Antonio Basso, former Commander of the Armed Forces of Sardinia. The General Staff of the "Regio Esercito" had initially envisaged to reestablish in Naples the preexisting disbanded Command of the XIX Corps, but Gen. Basso objected that in Sardinia he had already performed functions of command above those of a Corps Commander. This is why the Naples Command, although maintaining the same jurisdiction of the Command of the XIX Corps, was called "Armed Forces Command of Campania".

(13) The assignment will officially occur only in April 1944. Nevertheless, in practice, after Italy's declaration of war on Germany (October 13, 1943), with the beginning of cobelligerency, the 210th Division in December 1943 is already subordinate to the 5th Army and in January 1944 the 5th Army starts employing units of the Division.

(14) While there were no doubts about the operational subordination to the 5th Army, less clear (also owing to the rather generic formulation of the order) was the assignment as regarded the supplies for the Division. As a matter of fact, at the beginning of the Campaign's phase of movement, the uncertainties and irregularities in the practical supplying of the units caused

the Division serious inconveniences, which could be eliminated only with time.

(15) Also in the days following September 8, at the Division this is a rather rare occurrence. The troops, although consisting mainly of local elements, were not affected by the atmosphere of disintegration that spread within hours, even though they had the incentive of the families' proximity and the almost certain impunity for any kind of transgression.

(16) Enlargement of the Recreation Post in Florence, for the soldiers on leave from the area of operations, organization of a "Soldier's Club", free tickets to shows and requisition of a small hotel for officers on leave or in transit.

(17) The weekly was distributed free. Written mostly for the troops, its contributors were military of all ranks and many soldiers, who contributed more than 70% of the material published. All partisan political attitudes were prohibited. The paper was also welcomed by the inhabitants of the Apennine region, for they lacked radio and press information, and the paper contained a short summary of the main events.

(18) From the Historical Journal of the 210th Division: "Moral conditions: the transfer of the Division units to other organizations has decidedly influenced the troops' morale, because it deals a blow to the esprit de corps which we have, with great effort, managed to keep fervidly high. Consequences: a marked wish to be discharged on the part of the older conscripts, increase of unauthorized absences among the soldiers from the South".

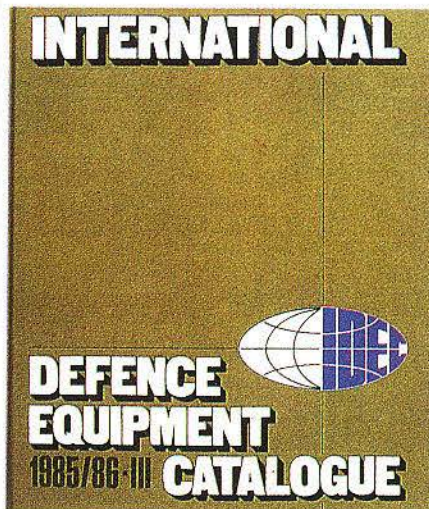
(19) See Rivista Militare - no. 6/86 - "The Auxiliary Units in the War of Liberation".

(20) See Rivista Militare (It. Edition) Anno II - no. 3 - March 1946. "The American Fifth Army during its winter stop on the Tuscan-Emilian Appennines and in the final battle (November 1944 - May 1945).

(21) The data on the casualties are taken from the Historical Journal and the book "The Auxiliary Units of the Italian Army in the War of Liberation" - Stato Maggiore dell'Esercito - Ufficio Storico, Roma 1977. A note prepared by the Division Headquarters in July 1945 on the occasion of the ceremony at Peschiera, gives a total of 2012 casualties in sixteen months.

(22) General Cortese, a man of great common sense, of remarkable moral courage, frank and clear in expressing to anybody his ideas without euphemisms.

Major Nini was a loyal interpreter of his Commander's thought and, following his example, did not hesitate to take decisions and give orders, taking upon himself responsibilities that often went beyond his functions. In fact it was the generous enthusiasm and the intelligent initiative of this young Staff Officer that succeeded in infusing the Division with the spirit and the impulse which permitted it to hold out at the beginning, and successively to develop its concrete, constant and appreciated work during the whole Campaign.



"International Defense Equipment Catalogue" (IDEC), edited by Jules Perel, Amstelveen (Netherland) 1985, 3 volumes.

This international catalogue of military and defense equipment is the third edition by the Monch editorial group; it is a reference work that offers several interesting features.

It consists of three volumes. The first is dedicated to the methods and organization of the catalogue, describing the FSC (Federal Supply Classification) for the military equipment presented. The FSC system is of American origin and has the advantage of being used by NATO countries as well as the majority of pro-western countries outside Europe. There is also an analysis of arms procurement procedures for each country represented, where such procedures are not secret. The commercial operator in the defense sector will also find in the geographic maps a useful aid for planning his visits because they enable him to plan his travelling through industrial areas of interest to him. The other two volumes, on the other hand, contain documentary material on the various products offered.

Special mention is merited by the chapter dedicated to Italy, setting out a practical synthesis of legislative and financial difficulties encountered in its military procurement sector.

We hope, however, that future editions will be cured of certain defects and will resolve a fundamental problem of structure.

As to the first we can mention the presence of the machinegun pods for the *Herstal* and *Avibras* under different classifications (1055 and 1005, respectively), even though they are the same type of product. And we can mention (p. 11-12) the incorrect denomination

of PM12S/*Sniper* for the *Beretta* pistol-machinegun. Or the disconcerting identification of the *Sig Sauer* pistol with the American flag, when the results of the U.S. Army competition were quite different.

As for the fundamental problem, we can point out that a publication based on advertising by the companies it catalogues is bound to result in somewhat incomplete information. It is true that the introductory page for each group also lists names of companies that do not advertise; however, if one wished, for example, to examine the offerings of Italian industry, one could easily be led to underestimate its capacity.

Alessandro Politi

ANNO XXVI - N. 12 - DICEMBRE 1985 - PUBBLICAZIONE MENSILE

TRADIZIONE MILITARE

"Tradizione Militare" ("Military Tradition"), Information Agency of the National Associations of Officers in regular active service.

Last year, on the 75th anniversary of the institution of the Administrative Corps, this periodical published two essays on the subject by Major General (ret.) Filippo Tatullo: one was an in-depth study of the Administrative Battalion and the relation of this logistical unit to the Administrative Corps; the other was a history of the Corps (limited to critical facts) as it came into being through legislation.

The evolution of the Administrative Corps in part of military history; however, we should keep in mind, as the author points out, that it paralleled the ordering of the Army (and the logistical services in particular) and, more important, the evolution of administrative and accounting legislation of the state. All research on the subject, therefore, requires a historical-legal approach, interpreting the law with scrupulous respect for what the legislature "actually intended".

The Administrative Corps became part of the Army under Article 2 of Act No. 531 of 17 July 1910: "the following are instituted: ... b) an Administrative Corps, composed of administrative officers, that shall keep the accounts of certain corps, institutes and establishments" (succeeding articles set out the administrative structure of the new Corps, providing for career steps up to the grade of colonel and the requirements for enrollment).

In 1923 the Corps was given a more important assignment; in fact, the "Diaz" organization of the Army provided

for an office of accounting and review in each Army Corps Command, headed by a colonel and staffed exclusively by senior officers and senior captains of the Corps.

On 2 February 1928 a "United Text of legislative dispositions concerning the administration and accounting of the Corps..." was produced; it was fundamentally important to the history of the Service not merely because it provides in Article 8 for the establishment of the Office of Accounting and Review of the Army Corps - until that point provided for only by the law on the organization of the Army - but because it would constitute, in 1976, with amendments, the legislative basis for the current Inter-service Administrative Regulation (R.A.U.).

Twelve years later Act No. 1518 of 21 October 1940 instituted the office of the "Administrative Directorate of War" for each of the active Major Units of the Army, whose role was to integrate the functions that in the territorial organization remain under the jurisdiction of the Administrative Office and Office of Accounting and Review of the Army Corps.

Finally, in 1981 the legislator instituted the territorial Administrative Directorate and at the same time extended the duties of the Corps, granting the administrative officers the power to conduct ordinary administrative inspections (previously reserved to civilian authorities) and the right to hold office in the Ministry, at all levels of the administration, with signature power "for the Minister" (Articles 1, 4, 6 and 7 of Act No. 30 of 20 February 1981).

Funding for the Army units through special accounting previously assigned to the Commissariat Directorates (1910) was transferred to the Administrative Corps in 1923, which carried out from then on the special task of the Corps in the logistical field.

In the midst of the laws passed from 1910 to 1981 numerous minor provisions were enacted which the author, however, omits intentionally inasmuch as they are of marginal interest to the evolution under exam, except with regard to the position of comptroller in the Corps, which was substituted by the Chief of Administrative Service with the institution of the R.A.U.

The mention of future directions is interesting. The inter-service route, which was taken decisively after the second world war in the operative and logistical sector as well as the administrative sector, is an irreversible choice. It is also possible that in the NATO defense system, to which Italy belongs, Major Units of our Army will operate - in case of war - under the direct orders of Major Units of higher level with an Allied Command, therefore with a logistic and administrative organization different from the Italian one.



Michel Tatu

Eux et nous

*Les relations
Est-Ouest
entre deux détente*

Fayard Géopolitiques et stratégies

Michel Tatu: "Eux et nous - Les relations Est-Ouest entre deux détente" ("Us and Them - East-West Relations between Two Détentes"), Fayard, Paris 1985, 240 pages, F 85.

During the second half of the seventies East-West relations underwent a rigidifying process that set them back nearly to the point at which they were during the cold war period. Things improved substantially when the Geneva negotiations began in March 1985. However, it is impossible to say whether there will be a new period of distension or what its nature would be. Obviously East-West relations cannot be explicated by simple formulas since neither NATO nor the Warsaw Pact are monolithic blocks with identical perceptions, interests and behavior. There are profound differences between an American nuclear freeze exponent and a German member of the committee for peace, even if the slogans used by both are practically identical. Pacifism itself is radically different from one country to another.

The author attempts to interpret the variety and richness of relations between the various forces at play in the two blocs, examining in succession: the changes that took place as a result of the Soviet change in leadership, East-West relations, the armaments race, and the defense of Europe.

The new Soviet leadership is, with respect to the preceding one, less ideological and more technocratic, and, at least in part, more sensitive to internal public opinion. It is unthinkable, however, that Soviet foreign policy could change in substance; it may do so only in style. In fact, the priority given to security and the goal of socialist expansion are cardinal points which constitute the legitimate foundation of the present Soviet ruling class. One would expect, rather, that with the fall of ideological and economic prestige the U.S.S.R. will naturally be prone to substitute or add ever more indirect revolutionary, subversive and propaganda action to the so-called "panzer-communism", that is, direct military intervention. This tendency could be exacerbated in the event of political-social difficulties within the Soviet Union or within its empire in East-Central Europe. In this connection it should be noted that the empire has progressively changed from an exploitation area to a heavy economic burden. As for the Communist parties of Western countries, the tendency of the U.S.S.R. to provoke divisions is always more in evidence whenever pro-Soviet allegiance shows signs of slackening. The same thing will happen in third world countries. It will have an effect on the international strategic scene and on the correlation of forces given the preeminent role the international communist movement has always played in the strategy of the U.S.S.R.

East-West relations, on the other hand, are fairly well differentiated in the West between the U.S. and the various European states and in the East between the U.S.S.R. and its Warsaw Pact satellites. Even though the policy of the Reagan administration has induced the U.S.S.R. to be cautious, it has had a great impact on Western cohesiveness. The Western bloc was willing to see the American leadership become hegemonic but was wary of an imperialist system. Things have undoubtedly changed under the second Reagan administration, more pragmatic and less ideological than the first, but strong tensions persist at the potential stage. It is often best not to have rigid doctrines in foreign policy; it is better to be flexible and adaptable, especially not to provoke the adversary into taking a hard line. The steadfast attitude of the United States has been successful because it blocked the cautious initiatives of the Soviet leadership. Beyond a certain point, however, it may cause a Soviet reaction and create great difficulties within NATO.

Military strategic balance is determining in East-West relations. The crux of the balance is the defense of Europe, for which the author reiterates his well-known thesis that Western Europe's subordinate status is not at-

tributable to any objective, external factor or to geopolitical or economic factors. The American military guarantee is characterized by its very contingent and temporary nature. The lack of autonomy of European defense derives from the progressive unaccountability and moral disarmament of Europe's public opinion and leadership. A nuclear option would not exclude an American guarantee, especially in West Germany. The U.S.S.R. would certainly not be pleased by a military buildup in Europe, which can only evolve around a Franco-German axis. Yet the U.S.S.R. will have to accept it, even if it entails a lesser American presence in Europe, which, everything considered, allows the Soviets to legitimize their military presence in East-Central European countries, a presence which in substance protects their "empire", but formally serves to protect their own western borders.

LE COMMERCE DES ARMES DE GUERRE

JEAN-CLAUDE MARTINEZ



PRESSES UNIVERSITAIRES DE FRANCE

Jean-Claude Martinez: "Le commerce des armes de guerre" ("Commerce in Arms"), Presses Universitaires de France, Paris 1984, 126 pages, F 25.

The more arms sales are criticized and condemned the more they prosper. All attempts at international regulation have failed before the reality of political, economic and military interests and those of the system of international relations.

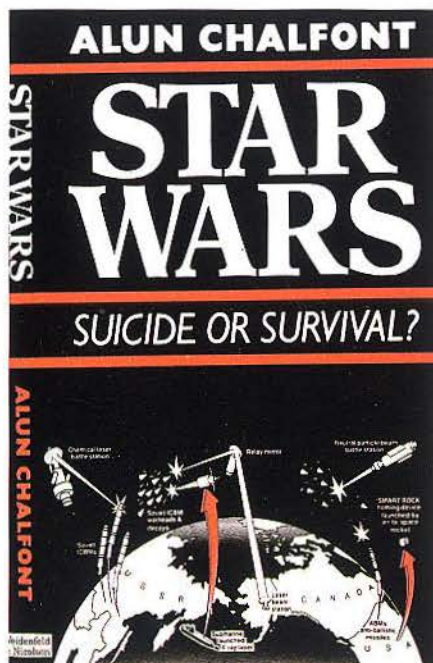


The factors which caused the expansion of world commerce in arms are connected with the changes in the international order that occurred after the second world war, which stimulated the demand for arms. In the first place, the number of states increased following decolonization: third-world countries lacking industries became avid arms importers. Secondly, the increase in the level of tension within and between states contributed to the expansion mentioned, particularly because it contributed to the consolidation of internal structures and political power of new countries, where military institutions are often the only cohesive force for the various social sectors and often constitute a sort of status symbol. Thirdly, there has been an increase in financial resources of third-world countries, particularly the oil-producing ones, but also the ones which benefited from massive international aid for development. Finally, technological progress affected arms trade because it tends to render weapons systems obsolete, especially where the rapid pace of development in electronics is concerned. These factors stimulate mutual increases in demand and supply of a quantitative and, in particular, qualitative kind. Commerce in arms has seen enormous development for the reasons mentioned. On a world scale, from 1960 to 1980 it grew by 8 percent a year and reached a peak of 25 percent in OPEC countries after the oil crises.

International commerce in arms raises many questions concerning its utility for exporting countries to which only a complex answer can be given. At the outset we should distinguish between political, military and economic utility. As for the political aspect, commerce in arms is an effective instrument of foreign policy. For example, it can stabilize the situation in areas of strategic national interest. It also gives the sellers permanent leverage over the buyers who become dependent on technical assistance and spare parts. On the other hand, the exporters should not overlook the fact that a massive infusion of arms in certain areas may cause imbalance and conflict which will inevitably involve the exporting countries. As for the military aspect, the exportation of arms allows medium-sized powers, Western European ones in particular, to keep alive a national armaments industry whose existence is not justified by the small size of their armed forces. This is not the case for superpowers whose arms sales are aimed in particular at political-strategic objectives. Finally, arms exports clearly have an economic purpose. It permitted the consumption or neutralization of part of the accumulated wealth of the oil producing countries. If that wealth had entered into the mainstream of the world econ-

omy it would have produced great imbalances in industrialized countries. Obviously it is a high-risk commercial sector, subject to the fluctuating politics of the importing and exporting countries.

Therefore it is necessary to give a heavily qualified answer and difficult to give a simple one. Broadly speaking, commerce in arms is a necessity for countries like ours as long as we intend to maintain a level of national independence in supplying our armed forces.



Alun Chalfont: "Star Wars - Suicide or Survival?", Weidenfeld and Nicholson, London 1985, 168 pages, £ 8.95.

This volume by Lord Chalfont, who is the influential Chairman of the Defence Committee of the House of Lords, is concerned with the main features of President Reagan's strategic defense initiative (SDI). They are primarily political, strategic and ideological rather than technological. Moreover, they concern relations between the U.S.A. and U.S.S.R. and also those between the United States and its allies, especially the Western European allies.

The crux of SDI concerns the impact it will have on the overall strategic situation: how the balance of power in the world may be based on a mix of offensive and defensive systems, the latter gradually gaining importance until the former become mean-

ingless, rather than on fear of nuclear retaliation. The problem is at the heart of the theory of deterrence which, in order to be effective, especially as it relates to the protection of the allies, must necessarily be based on an offensive capability, that is, on the possibility and plausibility of a preemptive first strike. At the end of the seventies and beginning of the eighties, "mirving" the warheads, which increased the number of weapons while restricting the number of targets of a preemptive strike, created an unstable situation. Fear of a surprise attack led to contingency planning for "launching under fire", which amounted to a permanent state of alert for U.S. nuclear strategic forces, with the well-known attendant risks exposed by the Snowcroft Commission in 1983. The system was turning out to be extremely rigid and, paradoxically, allowed for no other option than to increase the number of offensive weapons, a strategy which enjoyed less and less popular support.

With SDI President Reagan sought to increase the range of options available, to reduce the risk of war by resuming talks on arms control and to reduce the damages of a conflict if it were to take place.

In fact, the only short-range goal of SDI - to resume concrete negotiations on arms control and limitation - succeeded. Contrary to what its detractors sustain, perfect defenses are not necessary to achieve political ends. Even limited defenses, which are the truly predictable ones, are sufficient to achieve those ends. In particular, the elimination of advantages obtainable by a preemptive strike restores the nuclear stability that existed prior to mirving the missile heads. Public opinion in the U.S.A. and in Western Europe is showing increased awareness of this objective: support for SDI is growing on both sides of the Atlantic.

The major problems that may arise as a consequence of SDI concern inter-Atlantic relations. They are of two kinds: political-strategic and technical-economic. As for the first, SDI has two consequences: on the one hand, by strengthening the U.S. it boosts the credibility of its commitment to the defense of Europe; on the other hand, by reducing the vulnerability of the U.S. it increases the difference in the perceived vulnerability of NATO countries, which creates tensions among the allies. Only an effective extension of the antimissile defense to Europe could dispel such an impression and overcome the problem. As for the technical-economic problem, the prospects for European participation in the SDI programs have been exaggerated. Europe is likely to experience frustration in this regard and this will affect the level of European approval for President Reagan's initiatives.

1807 Regno d'Italia

Scuola di Modena - Palandrano a torti per Alievi color bleu

Tore che le Cavalieri di S. Maria albi cavalli grigi, oppure talo nero
quelli dei Dragoni delle Guardie e delle Guardie d'Onore

24 Aprile - Il Battaglione Bresciano viene fus. nei 1° e 2° regg.

Cacciatori a cavallo

10° Reggimento = (Archivi) Operai militari del Genio Marittimo

Abito verde con paramani risvolti, colletto di velluto nero fiab. pelo rosso

Gilet rosso - pantaloni verdi - stivali orlati di rosso

Cappello alla Turca con piumetto nero - bottoni con anora e Genio marittimo

Luglio = (Archivi) Fanteria di Linea; Dragoni - Allevi dritti, falda 22, tasche verticali

Abito bianco

Borse

Collo

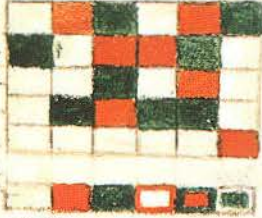
Paramani

Allevi

Falda

Distaghetta

del cappotto



Fanteria di Linea
Veterani, Invalidi
Artiglieria a piedi
Zappatori

Fanteria leggera -
allevi dritti

Regg. d'Albania e

Regg. d'Istria

Senza risvolti al petto, tasche trasversali
falda p. 10, passanti per spallina mo.

2 fili

Marinai Cannonieri - falda 8p.

paramani senza allevi, passanti
per spallina imbili, tasche trasversali

Genio d'Art. Genio, Trasporti - falda 14

senza risvolti, tasche verticali

hanno rovesci
al petto ed alla
falda, allevi
a 3 punte ar. pa.
= paramani, tasche
verticali a 3
punte, falda di
12 p. con spall.
= line.

Cacciatori a cavallo, falda 20 senza
Artiglieria a cavallo } 22 tasche - 8 alamari
Genio d'Art. e Genio } alamari al colletto
2 al paramani



Marinai

D'Albania

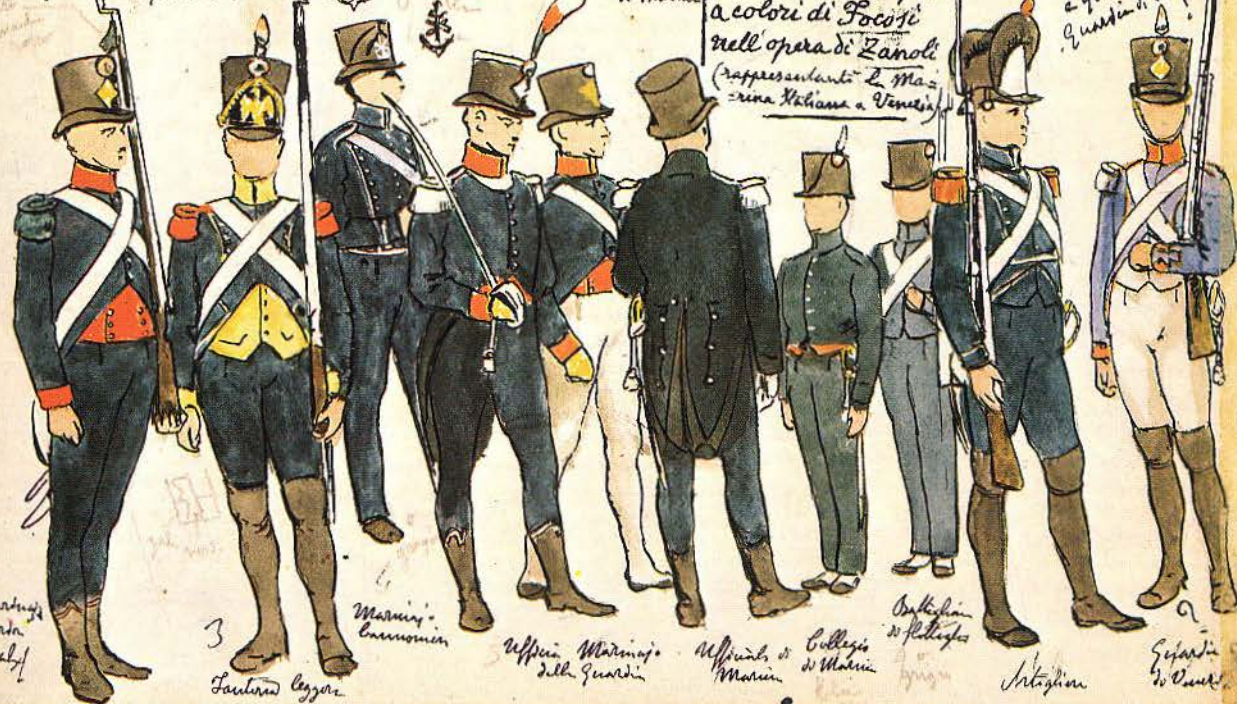
da una stampa
a colori di Focosi
nell'opera di Zanoli
(rappresentanti L. Ma-
rina Italiana a Venezia)

Questa uniforme
è quella della
Guardia di Milano



Placca dell'Artiglieria
di Marina
(Messa d'Onore)

Guardia
d'Onore
di Parma
(Messa d'Onore)
(non è present. l'anno)



Marinai
Guardia
d'Onore

3

Fanteria leggera

Marinai
Cannonieri

Ufficiali
della Guardia

Ufficiali
di Marina

Collegio
di Marina

Battaglione
di Poligono

Artiglieria

Guardia
d'Onore



Burden-sharing in NATO

Simon Lunn

Simon Lunn: "Burden-Sharing in NATO", Chatham House Papers, the Royal Institute of International Affairs, London 1984, 88 pages, £ 4.95.

One of the recurring themes in NATO political debates concerns the partition of defense costs among its member states, particularly between Europe and the United States. The problem is difficult and complex: it is not merely a matter of defining, but of evaluating the level of congruity between them and the economic capacity of each country to contribute to the common defense.

It is very difficult to estimate a country's military expenditures. In fact, there are entries in military budgets that have nothing to do with defense, while other military expenditures appear in the budgets of other government departments. Moreover, certain defense spending, like the social and economic costs of the draft and military service do not appear in the budget. They are expenditures which are difficult to quantify in monetary terms, but which should not be overlooked. Finally, the various states have different accounting methods for military spending. In Italy there is a difference between the services of the armed forces themselves: the Army pays VAT, while the Navy and Air Force are exempt with regard to most of their material.

While it is difficult to calculate the amounts spent on defense, it is even more difficult to evaluate whether the effort made by the various countries corresponds to their respective capacity to contribute. In principle it seems fair to maintain that a sort of progressive taxation ought to be adopted within NATO: the more prosperous a country, the more it ought to contribute to collective defense. Obviously the problem does not lend itself to precise and unquestionable solutions. The capacity to contribute may only be assessed on

the basis of many disparate parameters.

In practice the problem of burden-sharing is not an accounting one but a political one that involves the structures of the alliance and constitutes an aspect of the "conflictual interdependence" of relations between the United States and Europe. The Americans are convinced that they are carrying a disproportionate share of the burden of collective defense and that the high price they are paying for Europe's defense is unfair. The Europeans, on the other hand, claim that their contribution to the conventional defense of Europe is very substantial (and it is), and intimate that they are not willing to pay too high a price for maintaining a defense system under American leadership.

At times the debate has been harsh, the Americans threatening retaliation in the form of partial withdrawal of U.S. forces from Europe if the European states do not contribute more to defense.

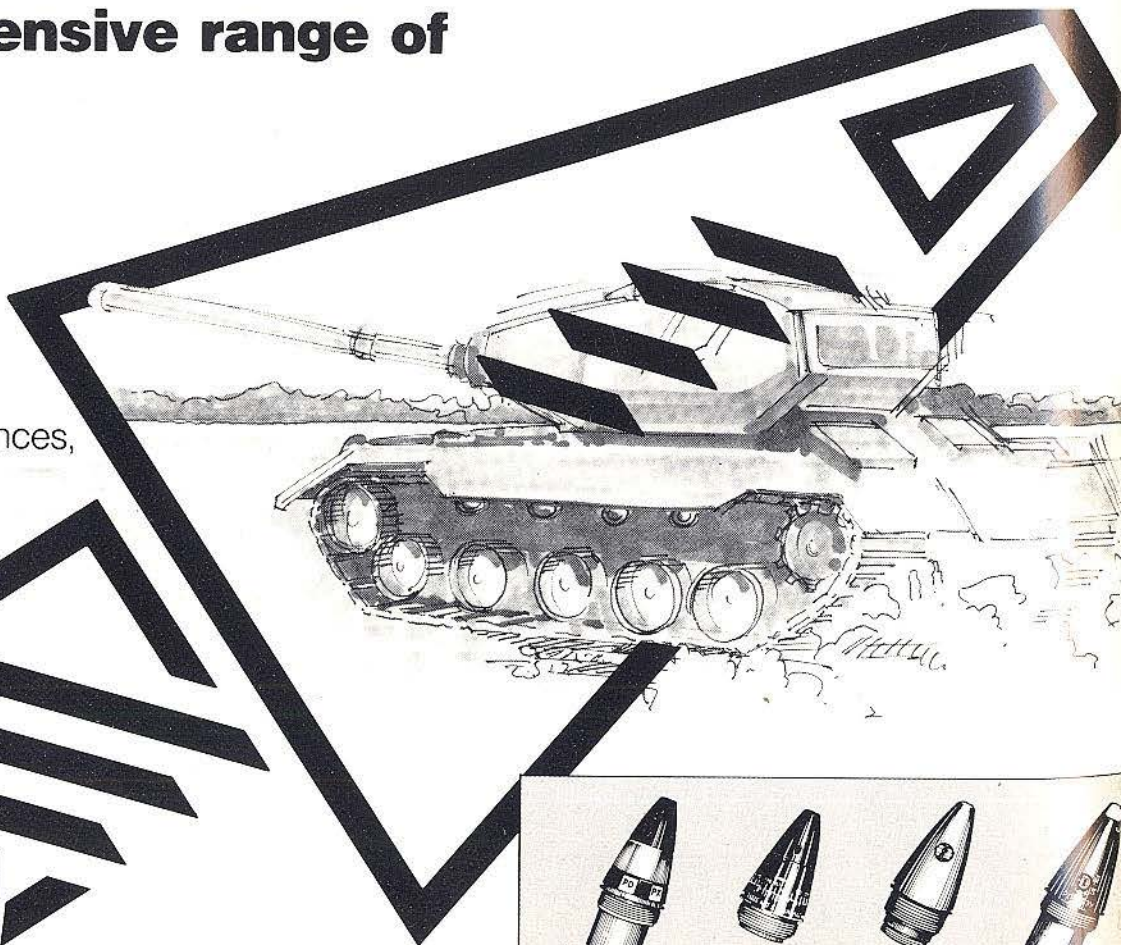
The problem cannot be resolved. It will continue to fuel debate between Europe and the United States due in part to the effect the debate on burden-sharing has on internal politics, especially in the United States.

by Carlo Bess

The most extensive range of FUZES

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1796 Repubblica Cispadana

anno IV Legione Cispadana

Plato Maggiore - (Copa Brigata - Rarambi)

Fanteria - 5 coorti

Cacciatori - 1 Comp.

Artiglieria - 1 Batteria

20 Dicembre
I cavalli sono marcati C.7

9 Novembre - Le coorti
usavano panno bianco

22 Novembre
Panno verde - laterali
colonnati per coorti

Compagnia
Cacciatori a cavallo
Modenese (Cronaca)



21 Dicembre -
Bandiera dei Volontari
Cispadani - Base il verde
poi il bianco, poi il rosso -
nel 1800 - Legione Cispadana
nel mezzo dei colori di guerra
in oro - entro
il fuso, la benda e
la berretta -
nel rosso -
Coorti Modenese
N.



Coorti Modenese
(Cronaca Rovatti)

Tutte queste
figurine esson-
do stati tratti dalla Cronaca manoscritta
e disegnata e colorata a mano d'un certo
Rovatti, Cronaca che esiste nell'Archivio
di Stato in Modena, con alcune altre
guardie negli atti accettabili tutte
le conclusioni sia di forma genera-
le che di dettaglio. 1796 dopo a

Cacciatore a cavallo 1797

(dal "Zanotti")
Battaglia della Milizia in Milano - 9 luglio
(Zanotti - Zanotti)



Compagnia Usseri Requisiti

Uff. della 7a Compagnia (Modena)
(Cronaca Rovatti)

Guardia Civica
di Modena
(Cronaca Rovatti)
dopo la
prima
1796



Guardia
Nazionale di
Milano -
ufficiale -
(Museo del Risorgimento
di Milano)

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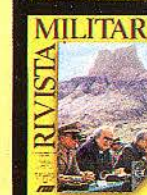
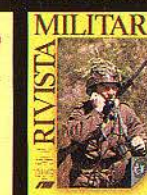
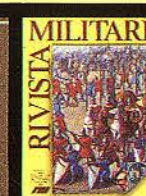
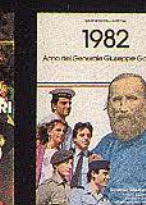
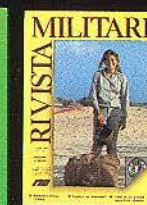
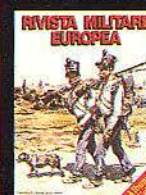
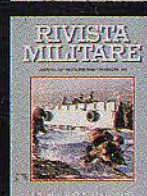
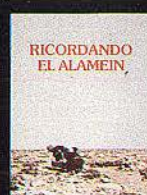
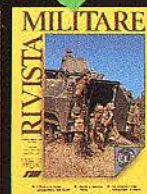
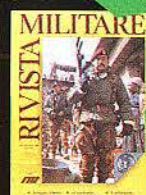
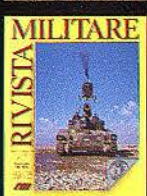
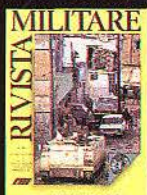
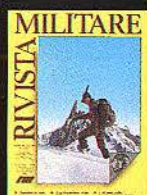
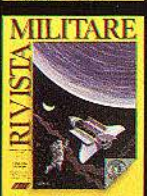
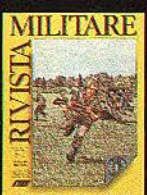
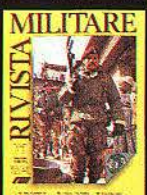
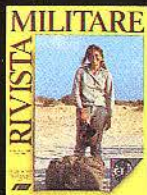
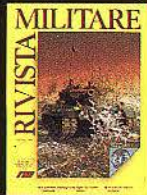
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Cristopher Columbus - A Present Symbol of Daring
and Courage for the 2000s

★ **GIULIO ANDREOTTI**
Arms Control
and Reduction

L'IMPEGNO DELLA RIVISTA MILITARE





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The aim of Rivista Militare is to broaden and update the technical and vocational training of Army Officers and NCOs. To this end it functions as a vehicle for the dissemination of military thinking and as a forum of study and debate. Rivista Militare is also intended to be a means of informing the general public about the Army and military matters through the publication of articles of current technical and scientific interest.

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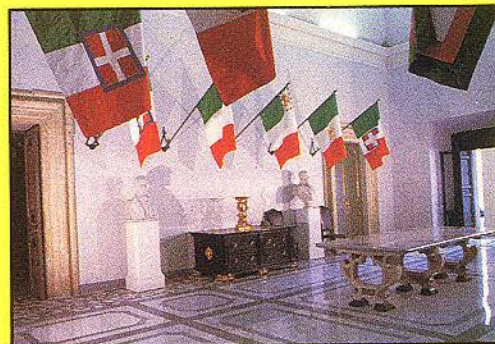
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CRISTOPHER COLUMBUS

Nord America



Isole

Traversata del 1492

Bahamas

Traversata del 1493

Traversata del 1502

Isole di Cip

Guadalupa

Martinica

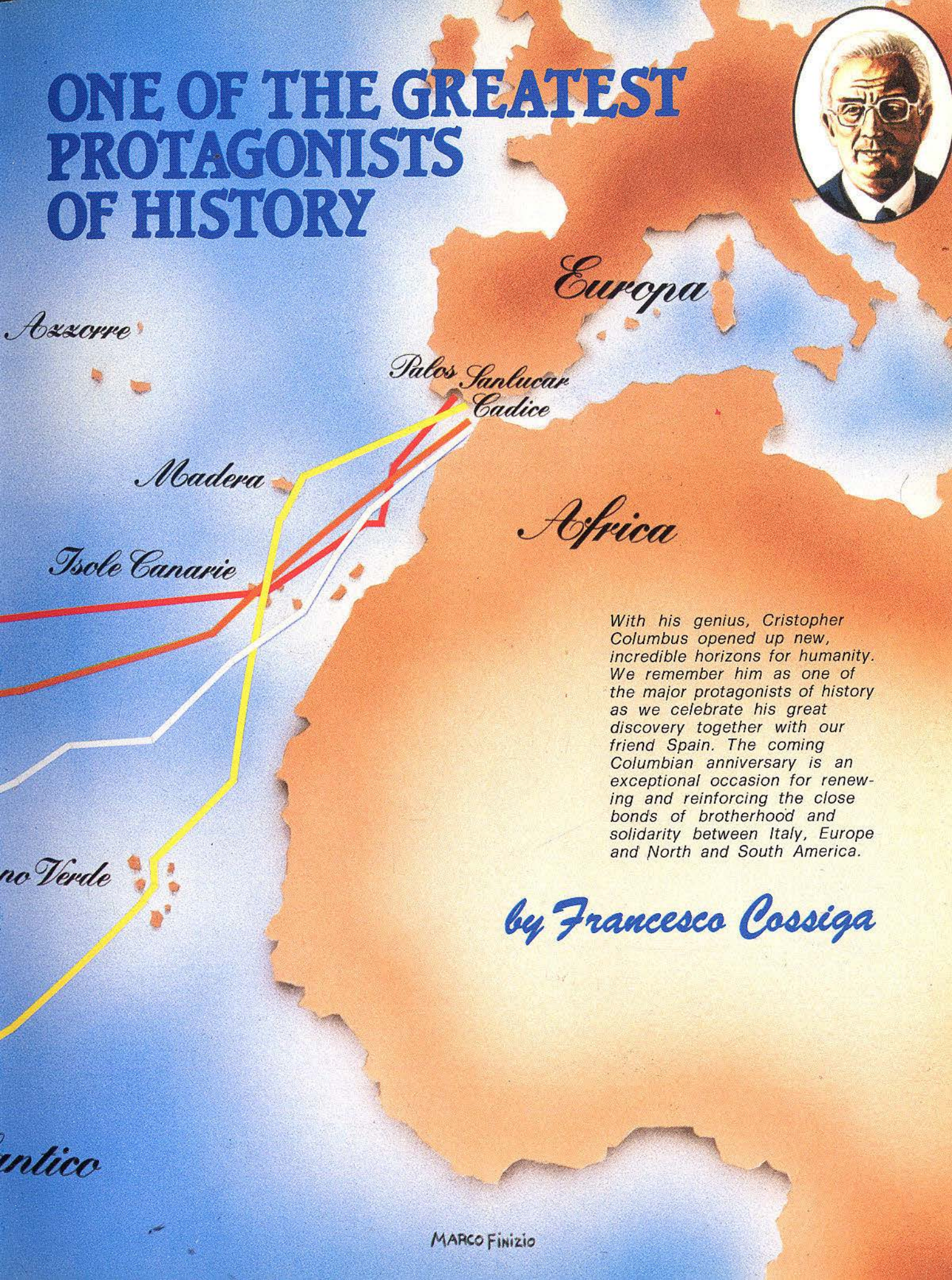
Trinidad

Traversata del 1498

Oceano Atl

Sud America

ONE OF THE GREATEST PROTAGONISTS OF HISTORY



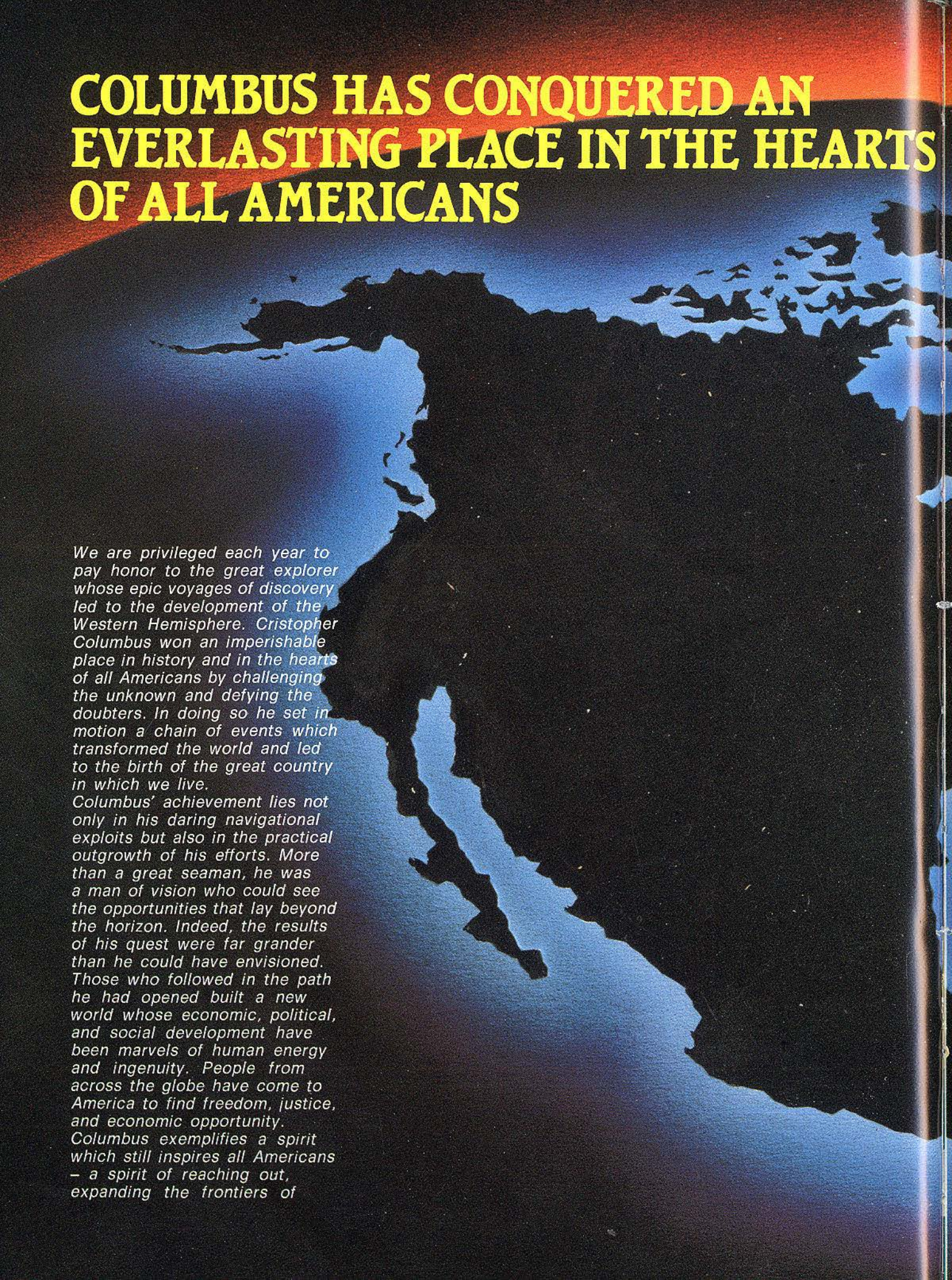
Europa

Africa

With his genius, Cristopher Columbus opened up new, incredible horizons for humanity. We remember him as one of the major protagonists of history as we celebrate his great discovery together with our friend Spain. The coming Columbian anniversary is an exceptional occasion for renewing and reinforcing the close bonds of brotherhood and solidarity between Italy, Europe and North and South America.

by Francesco Cossiga

COLUMBUS HAS CONQUERED AN EVERLASTING PLACE IN THE HEARTS OF ALL AMERICANS



We are privileged each year to pay honor to the great explorer whose epic voyages of discovery led to the development of the Western Hemisphere. Cristopher Columbus won an imperishable place in history and in the hearts of all Americans by challenging the unknown and defying the doubters. In doing so he set in motion a chain of events which transformed the world and led to the birth of the great country in which we live.

Columbus' achievement lies not only in his daring navigational exploits but also in the practical outgrowth of his efforts. More than a great seaman, he was a man of vision who could see the opportunities that lay beyond the horizon. Indeed, the results of his quest were far grander than he could have envisioned. Those who followed in the path he had opened built a new world whose economic, political, and social development have been marvels of human energy and ingenuity. People from across the globe have come to America to find freedom, justice, and economic opportunity. Columbus exemplifies a spirit which still inspires all Americans — a spirit of reaching out, expanding the frontiers of

by Ronald Reagan



knowledge, a spirit of undaunted hope. In the words of Joaquin Miller, "He gained a world; he gave that world its grandest lesson: 'On! Sail on!'".

Like Columbus, we Americans are ready to take risks in pursuit of our goals. We understand that boundless opportunities await those who dare to strive. Our tribute to Columbus has special meaning to Americans of Italian descent.

This son of Genoa was the first of many great Italian travelers to the New World. Millions of his countrymen would later settle in the new land, adding their precious contribution to the developments that stemmed from Columbus' voyages.

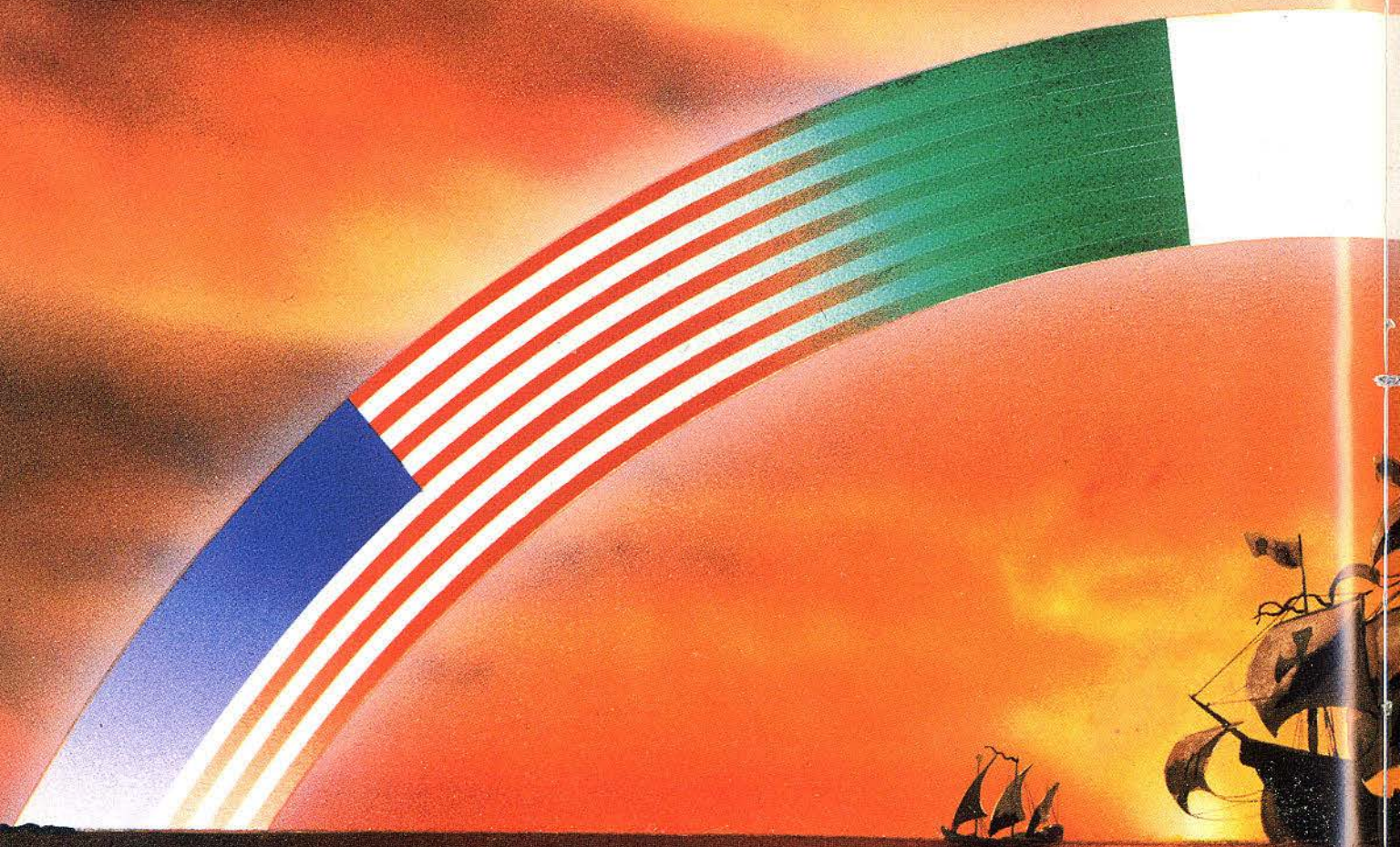
Columbus was the first link in a chain which today binds the United States to Italy in a special relationship.

In the coming years this commemoration of the voyage of 1492 will take a heightened significance, because we are approaching the 500th anniversary of that great event.

The Christopher Columbus Quincentenary Jubilee Commission, a distinguished group of Americans assisted by representatives from Spain and Italy, will plan, encourage, and carry forward the commemoration of Columbus' great voyages of discovery.

MARCO FINIZIO

SPAIN IS PROUD OF HAVING COLUMBUS' GENIAL



In five years' time the world will be commemorating the fifth centenary of an event that represented a transcendent milestone in the span of history. The discovery of the New World in 1492 brought about a magical widening of human horizons. At dawn on August 3, two Spanish caravels and a ship set sail from Palos on the western coast of Andalusia. Seventy days later, on October

12, the royal flag waved over a land unknown up to then. Leading these Spanish ships and the handful of intrepid Argonauts, there was a person who was predestined to rise to universal importance: Christopher Columbus. Christopher Columbus was a man of his times who, stimulated by his own experiences, and by stories, reading, confidences, studies and deep reflection,

conceived an idea, which he worked out and then proposed to those who could make it real. After overcoming refusals and opposition, he managed to transmit his enthusiasm to the sovereigns of Castille and Aragon, who overcame the obstacles and provided the means which made possible the voyage that would lead the Admiral of the Ocean to discover a New World.

WELCOMED PROJECT

by Juan Carlos I°

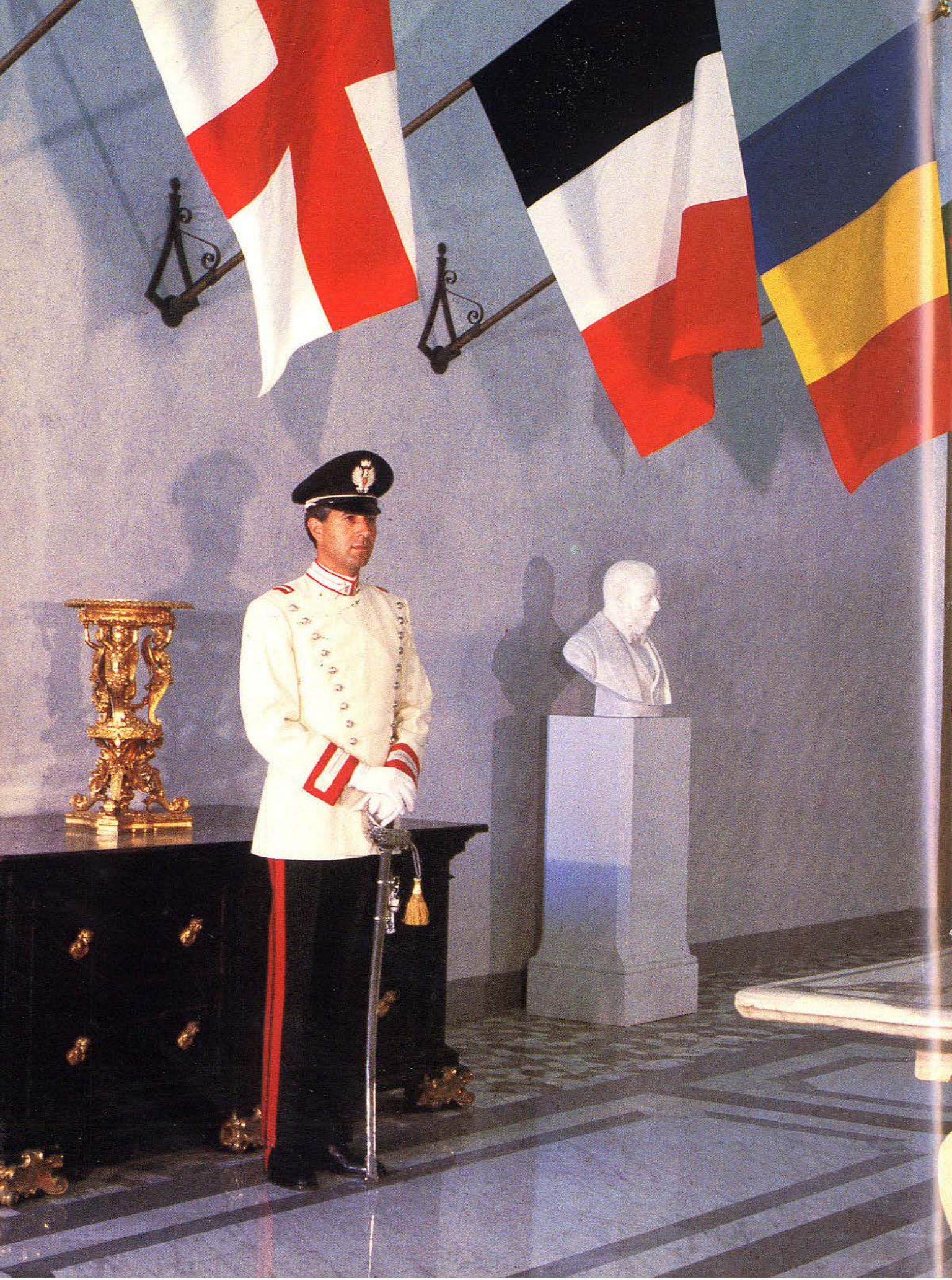


MARCO FINIZIO

It was a happy encounter, with a wealth of positive results which, besides adding new sheets to the nautical charts and doubling the map of the world, united the destinies of men and women on both shores of the Atlantic and started a process of fusion of different cultures, previously unknown to each other. Still today, five hundred years later, this meeting continues to produce fruits of

indisputable importance. The figure of Christopher Columbus arouses an insatiable curiosity. There are many theories, often conflicting, about his origins, his studies and his "secrets". Despite this, all agree in recognizing his merit as driving force and author of the enterprise. An enterprise which came from Columbus' faith in his plan and the enthusiasm of the Spanish monarchs and society in

his regard. Spain is very proud of having promoted Christopher Columbus' project under its own sails and banners. If the effort was great, the consequences were immeasurable. We Spaniards owe one of our most precious peculiarities to the great navigator and tireless discoverer. For five hundred years we have felt, and we know it to be true, that we are both American and European.



THE FORTIETH ANNIVERSARY OF THE REPUBLIC

1946: THE YEAR OF THE SEMINAL IDEAS

In the lives of nations, as in the lives of men, there are anniversaries of memorable years which recall, both the passions, feelings and life-styles of one or more generations, and the great events, the ordeals overcome and the successes achieved. And it is fascinating to realize that the moment on which the anniversary falls coincides in the collective consciousness with the completion of a historical cycle.

The year 1946 can thus be described as epoch-marking. The Italian people sensed the end of the historical process which had included the fight for national independence, the struggles for the social advancement and dignity of men and women, and the long and hard-fought battle against dictatorship to restore freedom to their native land. At the same time, they felt that the proclamation of the Republic and the election of the Constituent Assembly marked a new chapter both in the history of the ancient "Italic people with their many lives", and of the new unified state which had, in the short space of one century, from 1848 to 1945, gone through three wars of independence, two world wars and, finally, a heroic war of

liberation against Nazi occupation and domestic tyranny.

The Republic and the Constitution were the two great seminal ideas that enabled the reconstruction of what war and dictatorship had destroyed. The Republic sprang from the free and direct choice of a sovereign people. The Constitution, drawn up by the first Constituent Assembly in Italian history, is a bulwark destined to last because, as Piero Calamandrei wrote, it is cemented with the blood and tears of the Italian people.

The values of the Constitution, the spirit of its general principles, the rights and duties it enshrines and the guarantees it provides have penetrated deeply into the national consciousness during the last forty years. Political, social, economic and cultural forces have found there the inspiration and strength to give the Republic the human countenance so nobly desired by those who fought and lost their lives in the Resistance.

Relations between citizen and state as well as the climate and methods of political struggle have thus been gradually transformed to conform more closely to the type of civil co-existence which is the characteristic element and the pride of the just, peaceful, pluralistic and democratic society that the Republican Constitution was intended to establish. There has been a rapid rise in people's average educational level and in the quality of information. There

has been growing critical participation in public life. An increasingly mature and vigilant public opinion exercises an incisive and extensive control over the administrative, judicial, political and constitutional organs of the State.

The wholehearted condemnation of terrorism which sprang from the conscience of the Italian people with all the force of a plebiscite is a confirmation of how their regard for freedom and civil order has matured in these last forty years. Social and economic development has been continuous despite the great structural imbalances between North and South, the difficult international situation and Italy's lack of raw materials. With immense sacrifice, toil and fervent hopes, a ruined country has rebuilt and revived its economy, regained its position in the international community. Italy is respected abroad, and continues to make a decisive contribution to the process of European unification and to joint security systems, that is to the great but not utopian political design that arose from the ruins caused by World War II.

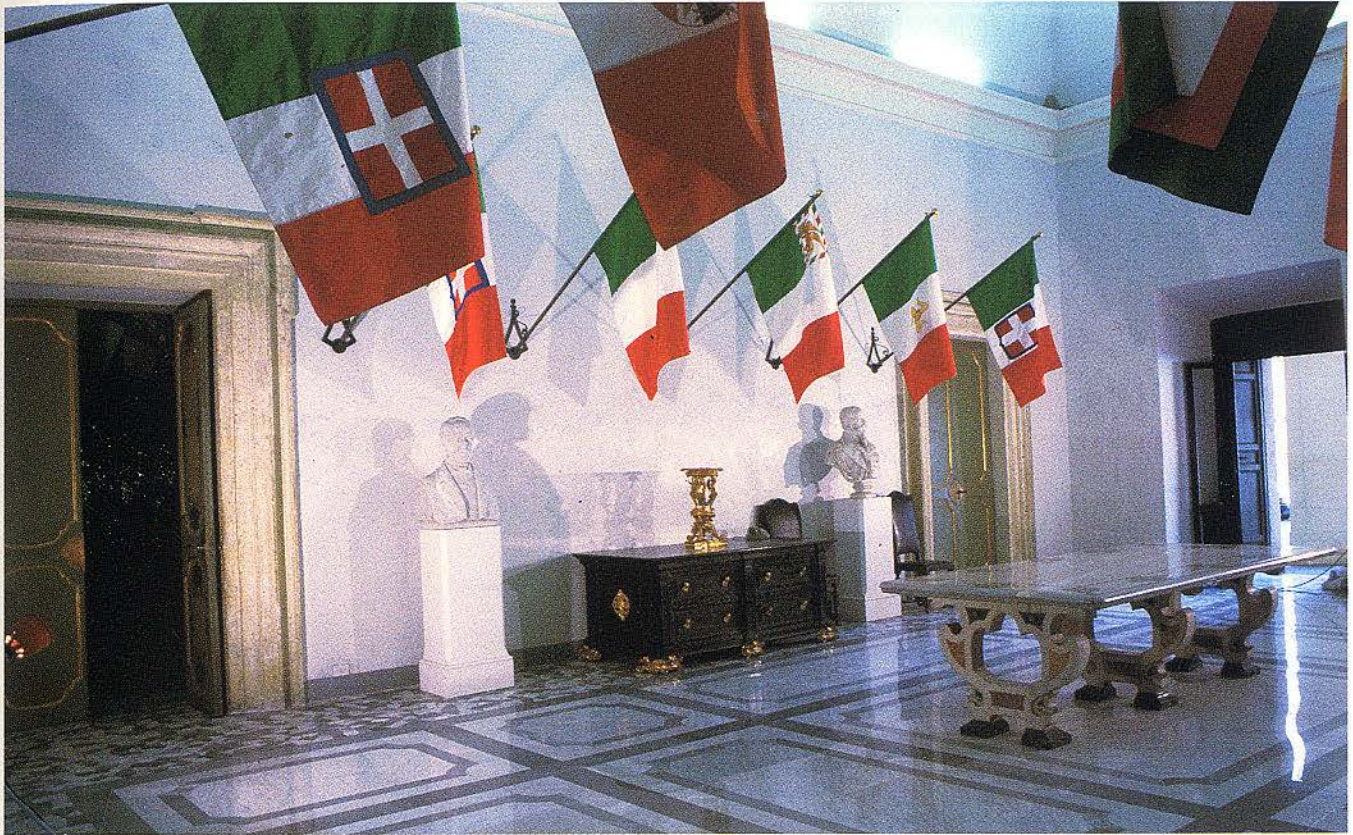
The Italian people's respect for nature has also become more widespread, aware and responsible. Movements to defend the quality of life and to safeguard and fully exploit Italy's vast cultural and artistic heritage are many, active and vigilant.

The rapid progress made by the spirit of tolerance has facilitated fruitful exchange of

Left.

The Quirinal Palace. Palace Warrant Officer in ordinary summer uniform in the Hall of the Tricolour below the flags of the Ligurian Republic (1787-1805), the Roman Republic (15th February 1798-30th September 1799) and the Neapolitan Republic (23rd January-22nd June 1799).





Quirinal Palace.

Above

Hall of the Tricolour: in the foreground, the flag under which the armies of Savoy crossed the Ticino on 23rd March 1848; along the rear wall, the partially visible flag of the Kingdom of Sardinia (27th March 1848), with the shield of Savoy in Samnite style; the standard of the Roman Republic (February 1849); the flags of the Venetian Republic (1848-1849), of the Provisional Government of Sicily (April 1848) and of the Kingdom of Italy, which remained unchanged from 1861 to 19th June 1946.

Left.

Hall of the Pre-Unification States: in the left foreground, the flag of the Kingdom of the Two Sicilies, partially covering the Standard of the Duchy of Modena and Reggio; in the background, the Royal banner of the Duchy of Parma, Piacenza and Guastalla. To the right, in the foreground, the emblem of the Duchy of Massa and Carrara; partially visible are the standards of the Duchy of Lucca and of the Papal States during the reign of Pius IX, which bears the Mastai-Ferretti arms.

ideas between different religious and philosophical movements and shown greater readiness to understand the problems of others as creating a climate of

international solidarity which has passed the most critical of tests on many difficult occasions.

In the words of a great constitutionalist: "With the birth of the democratic state, relations between individual nations change: the mechanics of freedom in constitutional law is connected with that of peace in international law". It was their awareness of this point that led the founding fathers of the Italian Constitution to approve article 11, which declares: "Italy repudiates war as a means to attack the freedom of other nations and as a way of settling international disputes".

Italy has kept this vow, just as she has maintained her dignity and interests with the peaceful means provided for by the Charter of the United Nations.

Union with the other countries of the Atlantic Alliance, which today finds favour with most political forces, is the surest sign of Italy's international position and her earnest desire to defend her independence and

her freedom.

There have certainly been tough trials in these forty years, moments of great political and social tension, periods when Italy's leaders have been divorced from the real nation and days of acute suffering, and yet the strength has always been found to continue along the road to progress.

Positive though the overall balance of these forty years may appear, we cannot, however, feel fully satisfied.

There are serious and urgent problems, for example the level of youth unemployment and the many cases of those who are materially excluded by society, which remind us of the need to rediscover the moral rectitude and efficiency which must regulate public administration and in civil life as a whole.

Our duty to those who gave their lives for Italy's unity, independence and freedom is to make a firm European commitment to overcome past and new reasons for crises.

Francesco Cossiga



ARMS CONTROL AND REDUCTION

SOME POINTERS TOWARDS IMPROVED SECURITY AND COOPERATION IN EUROPE

Security questions occupy a central position among foreign policy problems, especially at the present time. Given the present state of international relations and technological developments in armaments, these questions involve the very survival of the human race and should, therefore, receive the greatest possible attention.

We are all well aware of the fact that any peace which amounts to the mere absence of war, based on mutual fear, is not enough; real peace must have its own "positive" contents. In other words, it must be based on growing international co-operation rather than on the balance of power.

We must, therefore, actively seek to foster transition from the present way of conducting international relations to new forms of organization.

Every factor encouraging greater confidence between countries takes on particular importance as this transition is prepared.

It is with such prospects in mind that I wish to deal with the steps that can be taken to maintain and enhance security.

Reduction of the risks of war is a prime necessity. Arms technology has now, in fact, reached such a level that a large-scale war would probably lead to the total destruction of the world we live in.

A process of gradual disarmament favouring the maintenance and enhancement of stability can ease transition towards a new order of relations where the "positive" values of peace prevail.

Let us attempt an analysis of the major factors contributing to this process, and the essential features of the process itself.

The fundamental prerequisite for balanced disarmament, as indeed for real stability and peace, is that all nations abandon any attempt to obtain military supremacy over other nations, or to use them as the target for the political projection of their military might.

The main stumbling block for disarmament is that each nation has its own particular angle on security, while at the same time leaders have not fully

realized the need to make certain basic policy decisions and embrace the principle of abandoning all ambitions of power or ideological supremacy.

A balanced process of disarmament must, moreover, take all the factors that contribute towards the overall military balance into account, dwelling not only on the total picture but also on the various links between them.

Clearly, this aim cannot be achieved without checking the initial facts, namely the starting position of the forces to which reductions are to be applied in order to reach a new armaments balance at a lower level. This means that military programmes must be absolutely transparent and it implies, eventually, a change in the conception of the sovereignty of nations, a conception which is still too all-embracing and absolute.

Finally, disarmament agreements must be subjected to rigorous inspection; all the parties involved must be able to rest assured that the others will observe the agreements to the full.

The countries of Western Europe have always held that these two principles – transparency of the initial facts and checks and controls for disarmament agreements – represent absolutely essential elements in

Left.

The fundamental prerequisite for balanced disarmament, as indeed for real stability and peace, is that all nations abandon any attempt to obtain military supremacy over other nations, or to exploit their military might in terms of political conditioning. In the photo: a "Tornado" multiple-role jet fighter, armed with two 20 mm cannons, with a maximum speed of 2.2 Mach at altitudes of over 11,000 m.



*The essential condition for a gradual reduction of nuclear arms is the redressing of the balance of conventional forces.
In the photo: a "Leopard" tank.*

any process of disarmament designed to ensure peace.

Italy has made its own contribution to this growing awareness, emphasizing the potentialities implicit in the role the scientific community can play in guiding political leaders towards the most appropriate choices. It has also stressed the importance of such initiatives as the "open laboratories", designed to encourage a wider and more operational cooperation between scientists in order to create the necessary conditions for greater mutual trust between nations.

I feel that this idea of "open laboratories" deserves

cultivating, not least because of the role they can play in the field of checks and controls for disarmament agreements; we have supported the idea staunchly from the outset and now have the satisfaction of seeing it gaining ground in world public opinion and among the political leaders of the world's major countries.

The first step towards increasing short- and medium-term security consists of balanced arms reduction guaranteeing continued stability at the lowest possible level of forces.

Let us see how this could be achieved in Europe starting from the present phase of negotiations.

The prime factor in the strategic equation clearly consists of the great powers' nuclear potential.

The United States strategic deterrent represents the cornerstone of NATO defence strategy,

having ensured continuous peace and development in Europe under conditions of security for more than 40 years.

It is, therefore, quite understandable that Europe should show considerable interest in developments in negotiations between the United States and the Soviet Union for the reduction of their nuclear arsenals. The aim of these negotiations is not only to bring down to more acceptable levels a destructive potential which would threaten the survival of the whole human race in case of war, but also, and perhaps mainly, to prevent a steady, qualitative and quantitative build-up of offensive nuclear weapons affording first-strike capability and adding further elements to upset the strategic balance in Europe.

It is against this background, and with these factors in mind, that the European Allies seek

to play an increasingly active role when consultations are held with the United States; our aim is to ensure that Europe's own particular security requirements receive all due attention during the Geneva negotiations.

In the first place, this applies to the negotiations on intermediate nuclear forces. In fact, the negotiations deal with defence systems specially designed for the European theatre, which is under the specific threat of SS-20's and short-range Soviet missile systems including the SS-21's, SS-22's and SS-23's.

We still hold faith with the original western plan encapsulated in the formula "zero option". We consider this option to be of general validity, in qualitative terms and in terms of actual territory.

In qualitative terms, the gradual elimination of intermediate nuclear weapons must also apply to the Soviet SS-20's deployed in Asia.

The reasons for this come under two headings: one of a technico-strategic nature, so to speak, and the other more specifically political.

From the technical and strategic point of view, the mobility of the SS-20's means there can be no guarantee that they will not be used against the European theatre simply because they continue to be deployed in the Asian part of the Soviet Union.

At the same time, from the more generally political point of view, we do not want to see a reduction of the Soviet threat to Europe leading to a greater sense of insecurity for countries in Asia; we feel it is essential, and indeed a matter of duty, to maintain positive relations with these countries.

Secondly, we hold that the greatly desired agreement on intermediate nuclear forces should also be extended to cover shorter-range arms in order to avoid any pretexts for violation of the agreement.

Finally, we have to come to terms with the problem of

the nuclear weapons held by other countries. At this stage in the negotiations, however, we feel it would be more appropriate for the problem to be dealt with in the context of special strategic arms negotiations, at which, in due course, all the countries involved could be suitably represented.

The issue of nuclear disarmament has a strong hold on public opinion and is of great concern for many states, especially in the Third World, as very considerable resources have gone into the production of a particularly destructive type of weapons. But for security in general, and European security in particular, conventional disarmament is equally important. Indeed, we consider that a readjustment of the balance between conventional forces is also an essential condition for the reduction of nuclear arms.

In the case of conventional weapons, the essential feature of the European strategic picture is that the balance of military power, in terms both of men and weapons, leans in favour of the Warsaw Pact.

Given the circumstances, as long as this imbalance persists it is bound to have repercussions on efforts to reduce the nuclear threat.

By the same token, if this imbalance were lessened the resulting conditions of greater security would favour significant developments in the reduction of nuclear weapons; this in turn would lead to a drastic reduction in the tendency to make final resort to nuclear arms to offset the conventional imbalance, and the chances are that this tendency would ultimately disappear altogether.

At the moment, negotiations on conventional disarmament are being held in two different quarters: in Vienna, negotiations are conducted on arms reduction in Central Europe, while the Stockholm Conference for Disarmament in Europe deals mainly with exploring the possible ways to increase mutual trust and security.

The Vienna negotiations on mutual, balanced arms reduction have, as we know, been going on for over 13 years. Although no agreement has yet been reached, the entire period has represented an extremely useful opportunity for the discussion of truly important problems relating to disarmament and security.

It is surely significant that during these discussions the two parties involved – NATO and the Warsaw Pact – have agreed on the target to bring their respective forces in Central Europe down to an equal level of 900,000 men. They have also agreed to make a thorough study of the problems involved in inspections and the need to establish a sufficient degree of transparency for their respective military activities. These problems are of vital importance for security on both sides.

Although the new Soviet leadership has expressed greater readiness to accept effective inspection systems, the East-European delegations at the MBFR still show a considerable degree of reluctance to embrace truly effective control systems, above all in the case of compulsory on-the-spot inspections.

I must say that this inconsistent behaviour is somewhat surprising. The line adopted by the new Secretary General of the Soviet Union Communist Party has accustomed us to expect a steady series of proposals on the subject of disarmament and arms reduction, and they would certainly receive yet closer and still more serious attention if backed with more concrete behaviour during negotiations.

The Stockholm Conference on disarmament in Europe has also shown rather slower progress than was hoped for. We still, therefore, have some way to go to achieving stability in the balance of conventional arms in Europe. Yet this stability remains one of the major aims we are seeking to achieve through a process of disarmament.



*In the case of conventional weapons, the essential feature of the European strategic picture is that the balance of military power, in terms both of men and weapons, hangs in favour of the Warsaw Pact.
In the photo: a mechanically drawn FH 70 howitzer, photographed during range practice.*

This inevitably implies, even more than numerical reduction, a reorganization of forces along strictly defensive lines.

Difficult as it may seem to draw a clear line between offensive and defensive weapons, evaluation of the overall organization of the armed forces should yield the criterion to make such distinctions.

Military installations take on decidedly offensive connotations when they are essentially geared to launch surprise attacks on what is considered enemy territory, and provide support

to prolong and advance such attacks.

One can, for example well imagine that large-scale deployment of tanks and artillery is seen on the Soviet side solely in terms of preventing any future conflicts from being fought on their own soil. Nevertheless, deployment in such strength inevitably arouses suspicion, and all the more so when, as even the layman can see, it is not warranted by the basic requirements of defence from external attacks.

This is why we Europeans consider it essential for the peaceful, defensive intentions reiterated by the Soviet Union to be backed with concrete action, namely the reduction of Soviet military forces in those cases where, objectively, there is little justification for them on purely defensive grounds.

It must be stressed that, in taking this position, we are convinced that it would entail

advantages not only for security on the continent of Europe, but also for East-West relations as a whole.

Some mention must also be made of the ongoing negotiations at the Geneva disarmament conference for a total ban on chemical weapons and their production.

Neither Italy nor most of the other western European nations are in possession of chemical arms. We are, however, convinced that not only Italy and western Europe would stand to gain from an agreement to level down the balance of such hateful, deadly weapons – all the more fearsome in such densely a populated continent as ours – to zero. This should be achieved through the destruction of all existing stocks and the means for their production.

On taking cognizance of the American government's recent decision to introduce certain measures for modernization in



Soviet proposals for disarmament and arms reductions are not always fully backed by the appropriate behaviour during negotiations.

In the photo: the torpedo-boat destroyer "Impavido", armed with sea-sea and sea-air missile systems, 2 twin 125/38 cannons, 4 76/62 cannons, 2 triple anti-submarine torpedo tubes, a helicopter with sonar, sea-sea missiles and torpedoes.

the field of chemical weapons, we also bore in mind the fact that this decision was reached after a moratorium unilaterally observed by the United States uninterruptedly since 1969 had failed to induce the Soviet Union to adopt similar restraints.

Above all, however, we considered the fact that any future production of chemical weapons – which in any case will not be deployed in Europe – on the part of the United States cannot start before October 1st

1987, and that production can only begin if no agreement to ban these weapons has been reached by that date.

It is our intention, and the intention of all the countries in the Alliance, to do everything within our power for this agreement to be settled in the time remaining.

Once again, the main stumbling block in negotiations now taking place is the reluctance of the Soviet Union and its allies to accept an effective system of checks and controls.

And yet, in this case, checks and controls are absolutely necessary. Even the least violation of the articles of a possible agreement would, in fact, have undeniable military importance and devastating effects on European security.

At this stage, we can only hope that the Soviet Union, too, will share our conviction that it would not only be useless but

also quite immoral to risk setting off a deadly spiral in the hope of gaining or maintaining some fleeting advantage.

I remarked before that a process of disarmament aiming at enhanced conditions of security and stability can undoubtedly ease the transition to positive peace marked by forms of increasing political cooperation in Europe. We have also seen how the accomplishment of such a process demands transparency of intentions and effective means to enforce observance of the agreements concluded.

In other words, there must be a steady growth in the mutual trust implicit in relations between states.

All the more importance, therefore, attaches to the process begun just over 10 years ago with the Conference for Security and Cooperation in Europe, and which has reached the final phase of constituting a forum for dialogue, offering a code of conduct and a programme for political action.

We believe that Helsinki represented a step in the right direction. Even though it is turning out to be longer and more complicated than we had imagined at the outset – as some rather discouraging "sequels" bear out – we are nevertheless convinced that it represents a basis for future, possibly unspectacular but certainly significant, progress towards creating a climate of better understanding and more constructive action.

It is in no way utopian, but a matter of responsibility and duty, to acknowledge the fact that mankind has reached a historical turning point, and must now choose between self-destruction and abandoning the violent means it has used for thousands of years to settle its most important disputes.

My opinion is that, against a background of ongoing negotiations aimed at settling East-West differences and, at the same time, at examining the essential issues of security, there is an increasingly apparent

need for nations to achieve a higher degree of self-restraint.

The most likely prospects for reducing the common risk lie in realistically conducted negotiations and the readiness to accept the basic, reciprocal needs security implies.

A generally acceptable approach to disarmament entails support of the principle of an equal degree of security for all those engaged in East-West dialogue and the abandonment of any aspirations to military supremacy with the aim of achieving super-security or asserting superior status.

The intensive efforts now being made in the various disarmament negotiations have the precise aim of paving the way to agreements leading to a gradual evolution in this direction. The evolution envisaged is away from an increasing awareness of the grave risks implied by the present situation towards an atmosphere less charged with suspicion, a slowing down of the arms race, reduced arms budgets and increased possibilities for cooperation at all levels, embracing political, trade and economic relations.

There appear to be real possibilities for a realistic policy aiming at the elimination of the gravest risks inherent in the present European situation through a gradual step-by-step approach.

This policy must be based on disarmament agreements that can open the way to a process of gradual reduction in armaments: it is in this direction we must move if we are to achieve positive peace, proceeding with a sense of realism, but with real determination.

As regards security, the step-by-step approach is the one most likely to guarantee the most lasting results. It, too, requires good will and readiness to accept compromises, as well as acceptance of the practical implications of enforcements, checks and controls after the agreements have been thrashed out.

In conclusion, two more points remain to be made.

As has already happened in earlier centuries, by some mysterious historical process positive, and otherwise unattainable benefits can sometimes be obtained from evil. I am thinking, in particular, of the Chernobyl disaster, which has led to worldwide reflection on the interdependence of nations and peoples. One immediate result has been a significant series of proposals to introduce new or renewed communications systems designed to tackle the risks involved in the proliferation of peaceful applications of nuclear energy. The mechanisms guaranteeing agreement and security are to operate at a

"super partes" level, and for this very reason should prove particularly valid.

Moreover, making the necessary scientific adjustments, it is possible that even the military nuclear experiments that have remained undetected in terms of nanocuries or becquerels may nevertheless have contributed to atmospheric pollution. This constitutes another spur to maintain real efforts in disarmament negotiations.

The second point has to do with internal and international transparency in arms manufacture and trading. This issue is attracting much attention, particularly on the part of the young; despite all the obstacles that have so far arisen, even within the UN itself, we cannot disregard their expectations.

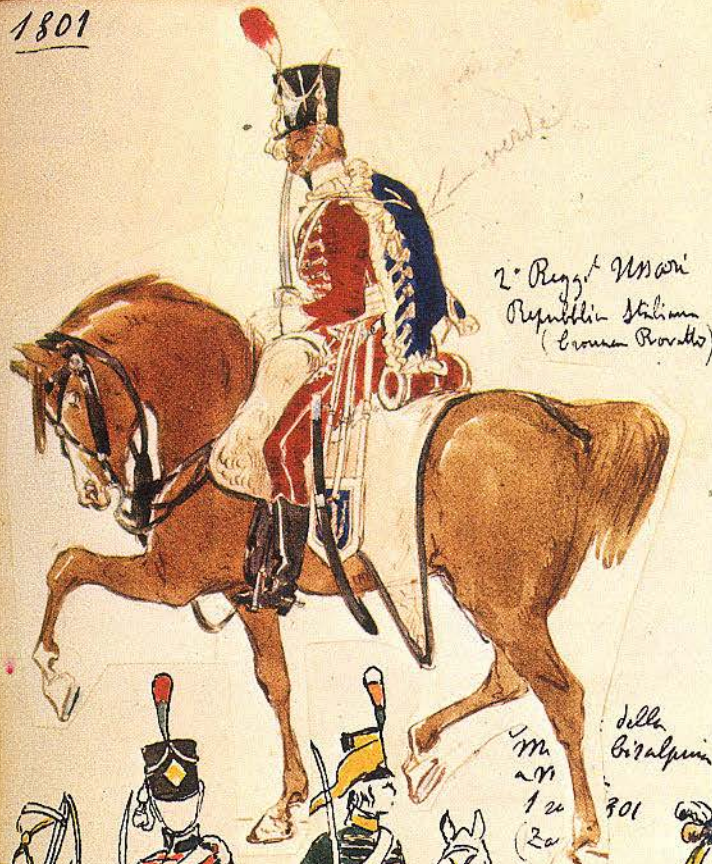
I believe that the "Centro Alti Studi per la Difesa", which has tackled important, delicate issues in the past, can analyze this problem, too, offering invaluable help to legislators without being conditioned by vested interests or the word-mongering of demagogues, neither of which are likely to be remembered by future generations as the promoters of peace.

Giulio Andreotti

ARMS CONTROL AND REDUCTION

SOME POINTERS TOWARDS IMPROVED SECURITY AND COOPERATION IN EUROPE

1801



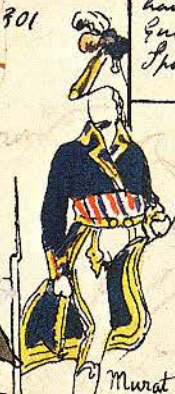
2° Regg^{to} M^ooni
Repubblica Italiana
(Cromas Rovello)



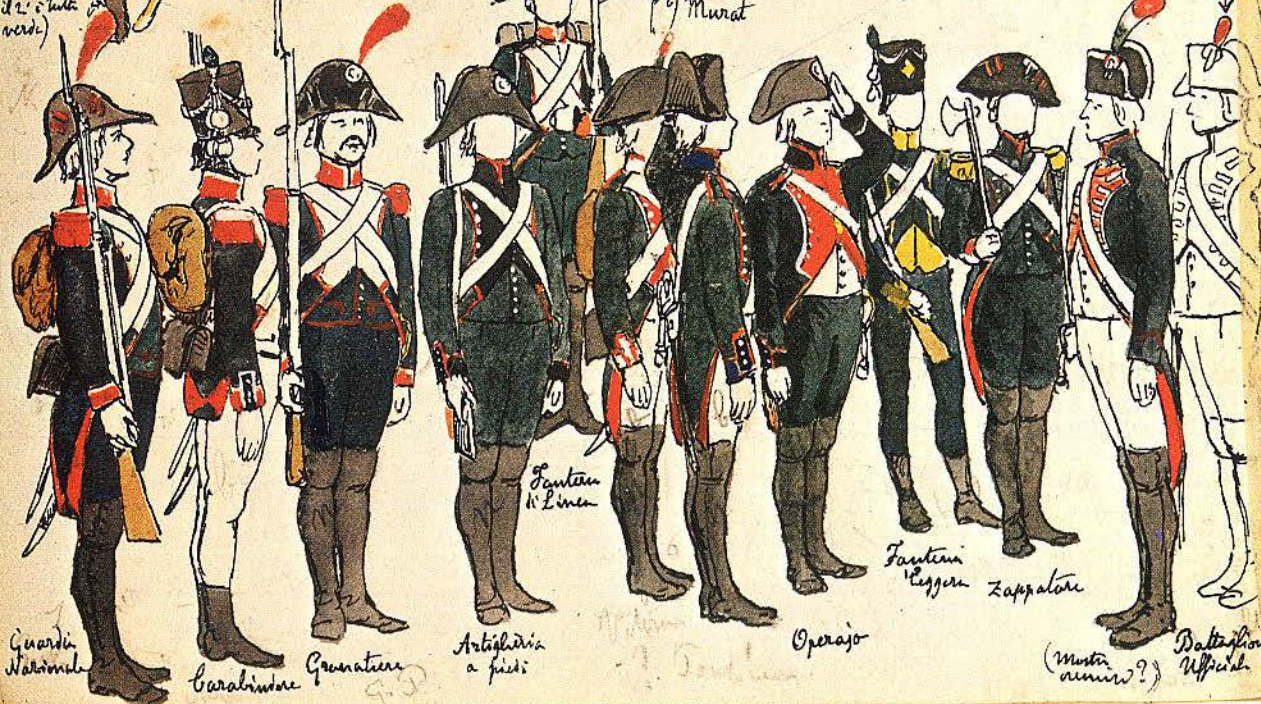
1° Regg^{to}
M^ooni
(il 2° è tutto
verde)

(nella testa
fascia in
carrata)

L'Artigliere
a cavallo
come altri
figura nel
1799



Murat



Guardia
Napolitana

Carabinieri
Granatieri

Artigliere
a piedi

Operajo

Fantini
Leggeri Zappatore

(Mister
numeri?)

Battaglione
Ufficiali

Da Humbert - (data imprecisata)
Stato Maggiore - Abito ben bordato su
collo, paramani a punta - retrousi neri (?)
Generali - Abito verde a 1 petto, fodora
e retrousi verdi, collo e paramani tondi rossi
vicini d'argento semplice o doppio
Secondo il grado.
Siarpa in
cristallo argento
Fistola
Gualdrappa
argento
fistolata
argento
argento
Aiutante di campo - Abito all'usanza
verde, reversi in punta, fodora e retrousi
idem, collo e paramani bi celesti, fielt
bianco al paramano, fobia delati - fielt
bianco - Bottoniere argento gilet celesti
mantella verde - Calzoni all'usanza
verdi ornati in argento
Spallina e bottoni argento
Sindac da cavallieri leggera
Spada in croce a pila, cinta nera
Soprintendente della Rivista
Abito a colletto verde -
paramani e fodora rossi
Bottoni argento, vesta e calotta bianchi - Ricami
alla francese argento, secondo il grado -
Cappello nero, cinta nera - Abito p. tinte
verde, tasca nella piega - Mantelli
restringuti tutti verdi - Pantaloni del 9. O.
hanno i cordoni a drappo.
Gualdrappa verde e argento - Obice argento
Spada -
Il tambur di
Lione ha spallina
rossa, piuma verde
Dalla Marina:
Rivista di M^ooni
1 sett. 1801
Lanoli -
L'Artigliere
a cavallo
come altri
figura nel
1799
Murat
Fantini
Leggeri
Zappatore
Battaglione
Ufficiali

LOGISTICS AND ITS EVOLUTION



One of the preeminent occupations and concerns of a good commander has been, at all times, to provision his forces, in order to enable them to fight under the best conditions.

The needs of the modern armies, grown in terms of quantity and quality of the requirements, have made these concerns more and more strong and urgent, extending them from the technical-military sphere to the political one.

In 1809, Napoleon, in a letter to Prince Eugene, wrote: "the management of the military problems is only half of a general's work; to establish and to secure the lines of communication is one of the most outstanding problems".

Marshal Rommel, in a retrospective view of the battle of El Alamein, stated that the regular supply of arms, ammunition and fuel is an essential condition for any army that wants to conduct a victorious battle.

In modern armies, the sometimes extremely rapid increase of the needs has produced a similarly fast development of the means capable of satisfying those needs. In some cases, nevertheless, these increments have not been coincident, owing to a certain lack of simultaneousness as well as to the non synchronous possible forms of employment.

However, in a broader sense, the problem that had already worried Napoleon, who was the first to try to solve it systematically, has remained unchanged in its essence which – albeit in different proportions and with different means – was, is and will always be that of ensuring that the armed forces live and operate in optimal conditions.

This statement also expresses the most traditional and widely accepted definition of logistics which, in the most important armies of the world, is conceived as the branch of military art which includes all activities aimed at enabling the armed forces to live and

fight in the best of conditions.

The same definition can substantially be found in Zingarelli's "Dictionary of the Italian Language", according to which logistics is "the branch of the military art that deals with the activities meant to secure to the Armed Forces all that is needed to live, move and fight under the best conditions of efficiency".

The "Memory on the Employment of the Major Units" (Publication 900 of the Doctrinal Series) of the Army General Staff, on its turn, at paragraph 2, defines the logistic manoeuvre as "the employment, combined in time and space, of the available logistic organs and resources in order to satisfy the life and combat needs of the units".

Other definitions – more or less appropriate and complete – mention logistics as the whole part of military art not included in strategy and tactics, or they see in it the procedure through which a nation's potential is transferred to the armed forces.

After all, these definitions are of secondary importance. Their different conception is mainly due to the point from which logistics is supposed to start.

Its final goal, instead, is clear to everyone and clearly defined by all.

As for the rest, even in their diversity, the various definitions worked out have another aspect in common: the economic one, in which logistics is rooted, confirming the fact that war cannot be only a military problem.

In a general sense, the logistic function recalls the rather common picture of the "noria".

The containers of the water-wheel fill up in the economic sector and, in emptying, they go through the supply sector and reach as far as the combat zone; on their way back, they carry to the rear lines all that cannot be used in the operations.

Logistics, a real bondage for military operations which the Commanders of all times have tried in vain to escape, imposes

limitations to the intensity and scope of the operations and expresses itself both quantitatively and qualitatively.

As regards the quantitative aspect, the potentiality and the times of action must be expressed in numbers, for it is necessary to estimate for how long a certain number of units can live and fight in a particular area.

From the qualitative standpoint, the logistic bonds may allow a certain operation or they may impose a reduction in its scope and a modification of its main lines.

Logistics therefore influences – with no possibility of exception without risking a failure – all military actions, with undoubted consequences, owing to which it could be said that logistics is the mathematical facet of Military Art, its rigid, scientific component.

LOGISTICS THROUGH THE YEARS

Immutable in its purpose, logistic has undergone with time an ample evolution.

From this point of view the logistics of Napoleon's era is, as regards principles and application, quite different from that of the first world conflict and only a very small fraction of that can be found in the second world war.

Actually the appearance of new materials has always led to new forms of combat and produced new needs. Thus one witnesses a continuous effort aimed at confronting the new demands with an organization appropriately adapted to the new means. Therefore the equilibrium between logistics and tactics is inevitably upset, and all anxiously strive to eliminate the imbalance.

Unfortunately, the problem is a recurring one; the new materials produce new needs and logistics continues to run after tactics.

The whole military history bears witness to it. The problem of supplying the armies of the

Napoleon's troops crossing the Dnieper. The Russian Campaign failed because of an incomplete solution of the logistic problems.

first world war, which were engaged in a war of position with stable fronts, entailing enormous consumption, had just been solved with the massive employment of railroads when the appearance of tanks and airplanes gave war a new aspect, and upset a logistic system that had been labouriously organized and was unable to adapt swiftly to the new reality.

Once the crisis was surmounted and a new logistic organization was achieved, adequate to the requirements of a war made essentially with armour and aircraft, with the advent of the nuclear weapon a new break occurred, followed by the anxious effort to adapt the means to the changed forms of combat.

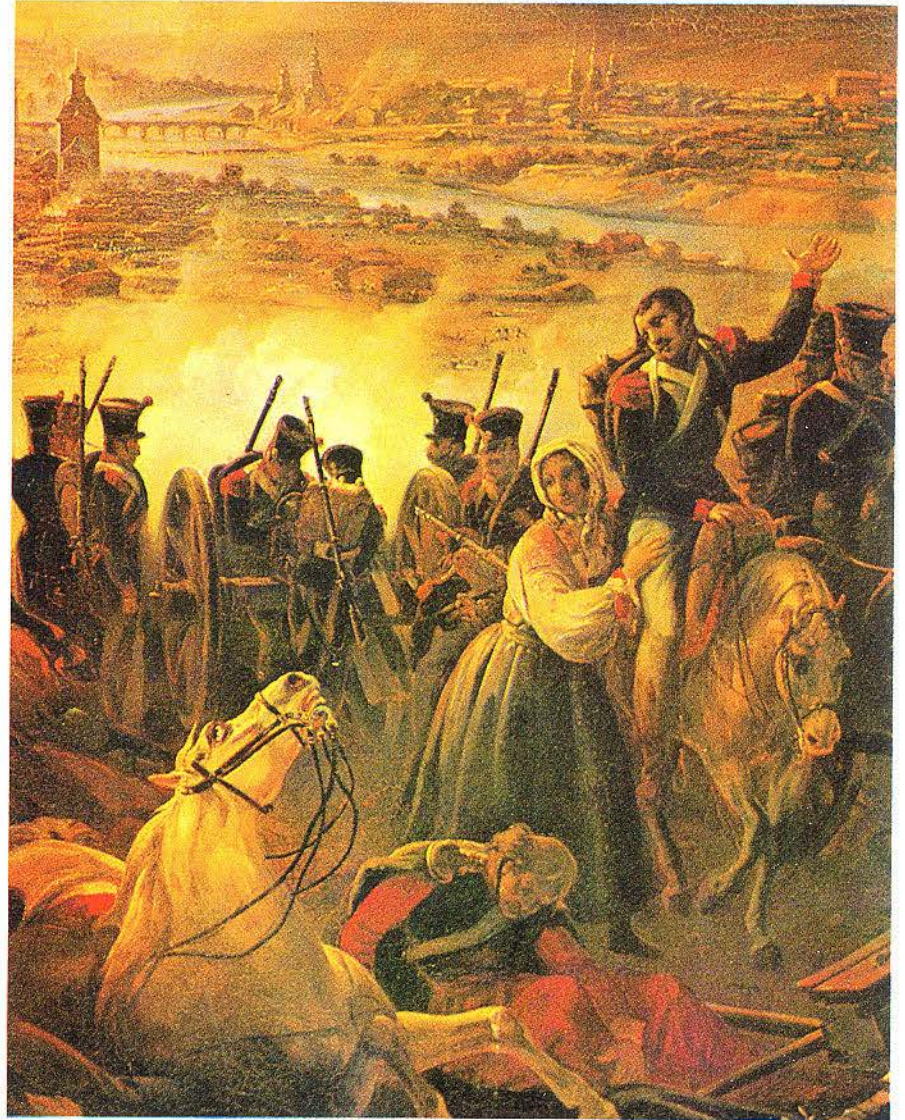
The course of the much troubled evolution of logistics along the times shows aspects of great interest and is very topical at the present time.

A short outline of the principles of Napoleon's logistics and a quick look at the railway and road logistics, up to the latest demands, marked at first by the appearance of the nuclear weapon and then by the still undefined – but tumultuous – irruption of the unknown space element, will perhaps allow us to bring into light a few forgotten principles, to better understand the difficulty of keeping a balance between tactics and logistics, and to realize the impending danger of upsetting this always precarious equilibrium.

NAPOLEON'S LOGISTICS

The fundamental character of the Napoleonic logistics was that it was basically meant for supporting offensive campaigns always projected outside the national territory.

We deal, therefore, with a conception of war based on



movement, from which some basic principles stemmed which – when fully complied with – produced the flashes of Jena and Wagram and when “pushed” beyond a certain limit, especially as regards distance and natural environment, caused the failure of the Russian campaign of 1812.

Among these principles, the following are considered preminent:

- the logistic and tactical plans, coordinated and worked out sufficiently in advance;
- the manoeuvre of the logistic means, considered an indispensable condition for fighting a battle;
- the organization's flexibility, as a postulate of the logistic manoeuvre;

- the security of the lines of communication, considered true arteries of the army.

THE 1815-1870 PERIOD

From 1815 to 1870 these principles underwent a remarkable stagnation, a direct, albeit questionable, consequence of the general reaction against all that was linked with Napoleon's image and deeds.

Only one power in Europe – Prussia – was perhaps not so much affected by this phenomenon and was able to use the teachings of Napoleon's campaigns in the establishment of a certainly efficient organization, as was that engaged



The Americans hauling their guns during the coup de main against the Ticonderoga Fort in March 1775.

in the Franco-Prussian war of 1870.

In the 1815-1870 period, the improvement of the war materials, the increased size of the armies, and the development of railroads were the factors that mostly influenced logistics.

The progress in the armaments, regarding especially the small caliber weapons (faster rate of fire: 12 rounds per minute, starting in 1862; automatic weapons capable of firing 100 rounds per minute) entailed a considerable increase in the burdens for the supply of ammunition.

Armies with an up to then unusual number of effectives were established during the American Civil War of 1861-1865 (the North mobilized up to 2.5

million men; the South reached a global strength of 1.2 million).

Finally, in the same conflict, the railway made its first appearance as a transport means of great capability.

Its first employment in the logistic field solved great problems of distance and loads but, on the other hand, showed that the railway is vulnerable and has therefore high security costs, and it sets sometimes serious limits to manoeuvre, owing to its rigidity.

In Europe the teachings of the American Civil War were little applied in the logistic field, with the exception of the Prussian General Staff. The Prussians in fact included certain experiences derived from the abovementioned conflict within

the framework of some principles of Napoleon's logistics, and decided to solve the problem of transportation with the systematic employment of the railway.

The Franco-Prussian war of 1870 was a probatory test in this regard.

The results were satisfactory, but there were some flaws.

As a matter of fact, the system proved that each Major Unit at Army and Corps level was closely bound to the terminal of the railway on which it relied; it confirmed that the protection and maintenance of the lines require a massive employment of personnel; it reconfirmed – above all – the impending risk of interruption in the continuity of transportation between the long-distance supply means and the transport vehicles available to each Major Unit.

That is to say that in 1870 the Prussian transport system, based on the railway, met very well the requirements of mobilization and satisfied the needs of provision and supply of the units, also because it was helped by the rapidity of the operations and by the rather passive attitude of the French army.

But there were also hindrances and critical moments, whose importance was nevertheless diminished by the satisfaction for the final success.

In short, in the light of what had been observed in the sieges of Metz and Paris, the main lesson learned from the operations indicated that the railway was perfectly suited for a stationary war, while for a war of movement the transportations by wagons, between the rail terminals and the units, turned out to be insufficient.

The General Staffs of the major European powers studied the aspects and events of the Franco-Prussian war with zealous attention.



Attractive picture of a railway flanking a road. Today the rail, road, maritime and air lines of communication are exposed, more than ever, to the risk of air attacks. The ordinary road is generally preferred to the railway.

France and Prussia were, of course, the first among them.

The results of this studies were translated into regulations for the logistic organization, in which the transport by rail had a predominant role that lasted up to 1940.

On the other hand, it was also confirmed that the railroad could not in any way push as far as the moving troops, and therefore it had to be considered a link – albeit a fundamental one – in the logistic chain, to be integrated with a complex system of on-road and cross-country transports.

Towards the end of the century (1880-1900), new factors influenced the logistic

organization, which was studied and implemented mostly to tackle the problems arisen during the last conflicts.

First among these factors was conscription, the consequence of which was that the armies of the major countries came to have strength of over one million effectives.

A similar impact was produced by the progress of armaments with the increase in firepower.

Artillery, in particular, with its quantitative and qualitative increments (increase of the caliber and number of guns, faster firing rate) became an insatiable eater of ammunition.

The automatic weapons of the infantry also showed remarkable increases in number, quality and consumption.

The demands, as regards the supplying of victuals, materials and ammunition, reached such a high level that many qualified experts believed that a future war would be of short duration,

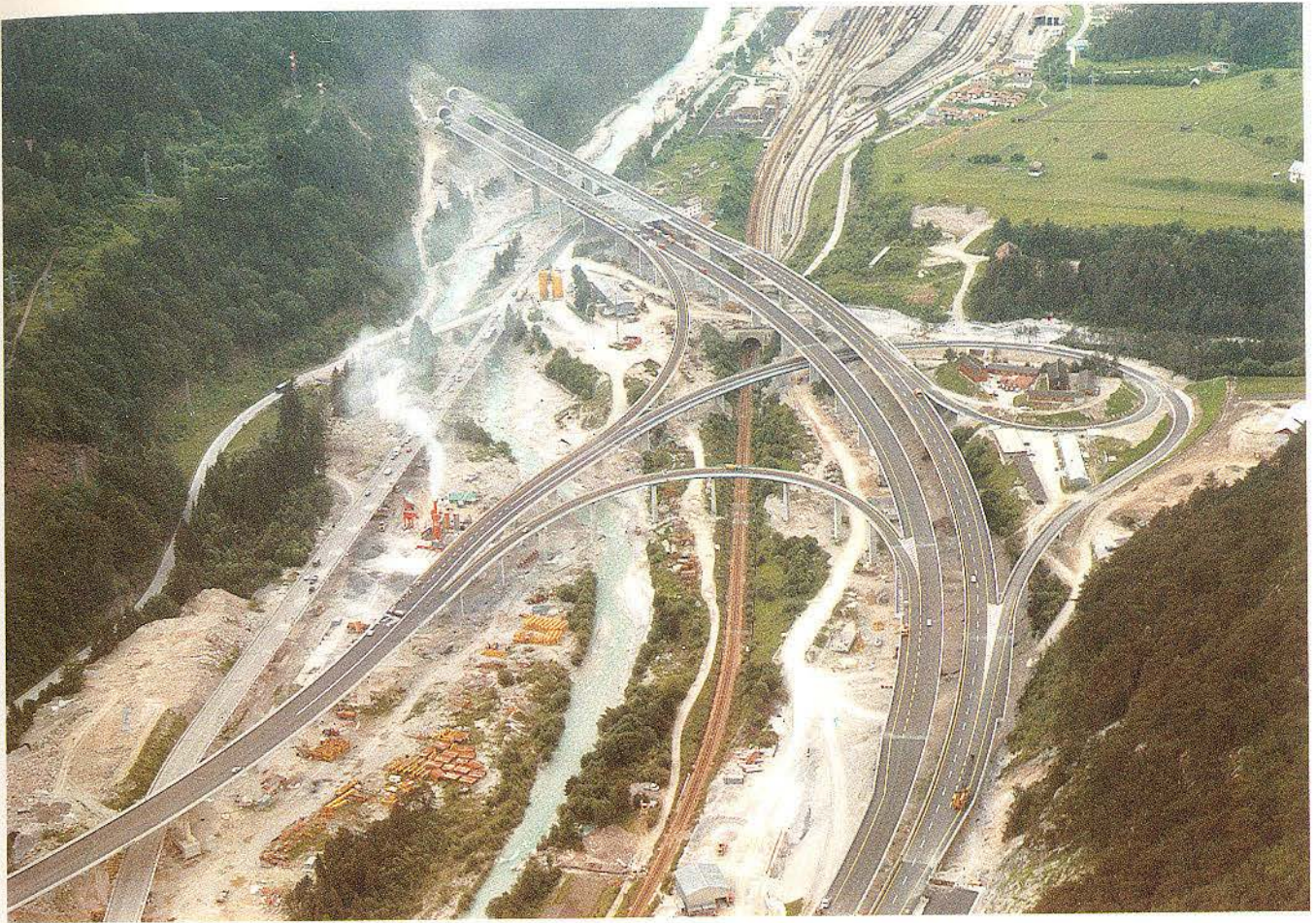
because no nation would be able to endure such a huge logistic effort.

THE 1914-1940 PERIOD

At the outbreak of the first world conflict, in 1914, the logistics of the opposing powers is undoubtedly based on the organization studied and implemented between 1870 and 1900. Few are the voices suggesting different and more modern solutions, and the audience is scarce.

The conflict, which was foreseen as characterized by movement, already at the beginning encounters two big obstacles:

- the German advance is very swift, so that it becomes impossible to rely on the railway, which is often damaged and overcome before it can be repaired; meanwhile, the transports by horse and mule prove to be inadequate;



• the consumption of ammunition reaches unforeseen levels. Mistakes in evaluation are repeatedly made and reach their peak in the battle of the Marne, where the lack of ammunition practically prevents the exploitation of the initial success.

Therefore, the "stationary war" makes its appearance already in 1915. A war in which the opponents, on a practically stabilized and continuous front, will lead a gigantic and fruitless combat until 1918.

This type of war marked the triumph of the railroad, the only way capable of meeting the enormous transport needs of the belligerents.

In some stretches of the front a density of 15 artillery guns every thousand men was attained or – even more significant – one piece every six metres.

When, in 1919, the calculation was made of everything that the Allied Forces had

needed in order to live and win, most people thought that the figures had reached levels which could never be surpassed in any way.

For the French army alone, the quantities were verging on 300 million artillery shells and about 6 billion rounds for the infantry weapons. For Italy – from 1916 until the armistice of 1918 – the artillery shells fired reached, alone, the estimated total of 40 million.

The railway had enabled the opposing forces to face, not without difficulties, the logistic situation in a conflict of the type considered, i.e. a stationary war.

But many experts asked themselves whether the acceptance of this kind of organization should still be considered admissible. An organization which downgraded manoeuvre, exactly in the moment when the development of the engine and aviation opened new horizons to tactics and logistics.

A stretch of modern superhighway which, in case of destruction, could cause the paralysis of the lines of communication. Logistics must therefore avail itself of a varied range of transportation.

On the other hand, the engine – in the form of transport or combat vehicle – had already made its appearance on the battlefield and in 1918 the allied armies could avail themselves of 200,000 trucks and 1,500 tanks.

Despite the rays of modern light perceived in the battle of the Altopiani of 1916 (over 15,000 men were transported from the Julian to the Trentino front aboard 1,000 trucks in addition to 214 train convoys), in 1917, with the employment of the tank in the battle of Cambrai (see Rivista Militare, It. Edition, no. 4/85), and in 1918, with the transportation by truck in a single day to the zone behind the Soissons-Epernay front of 120,000 men

and 7,000 tons of ammunition, at the end of the conflict the road transport remained only a complement – albeit an essential one – of the railway transport, just as the tank continued to be considered mostly a support weapon for the infantry.

Between 1920 and 1930, the technical advances increased the range, speed and power of the motor vehicles and tanks. Again manoeuvre became a necessity, to which the modern means granted again concrete possibilities, on a scale larger than in the past.

1940

When the hostilities of the second world conflict started, the logistics of the belligerents was mostly that of 1918, with the sole exception of Germany which, having planned a swift war of movement, could avail herself of a more flexible and composite logistic system.

The campaigns of 1939 and 1940 mark the success of motorization and the full reinstatement of manoeuvre.

Thus in most of the countries at war, once again one faces one of those periods of "imbalance" between logistics and tactics.

Starting from 1942, the imbalance risks to become more serious because the logistic system is burdened with the more and more widespread motorization of the armies, the constant increase of the fire-power, the ever more incisive effects of the air force on the lines of communication, the progressive worldwide spreading of a conflict that involves millions of men, from Europe to Africa, Burma, the Pacific islands.

The logistic needs reach unheard-of levels. Fuel becomes an essential element of logistics; it is estimated that in a year of conflict approximately 5 million tons of fuel are required.

For the sole Vistula-Oder operation of the Soviet First Armoured Army (12 January-3 February 1945), the units'

vehicles had to be filled up three and a half times with Diesel oil and six times with petrol; on the whole, 3,200 tons of fuel had to be transported.

On the average, the logistic requirements are about 30 kilos of weight per man-day.

At the same time, while on the one hand the lines of communication – rail, road, sea, air – are increasing, on the other they are more and more liable to attacks from the air. Among them, the one that appears to be the most vulnerable is obviously the railway, which as a consequence loses its priority, to the advantage of the road.

The belligerents' logistic effort occurs along these lines of communication and, in short, translates in terms of weight, volume, flowing of materials and transports.

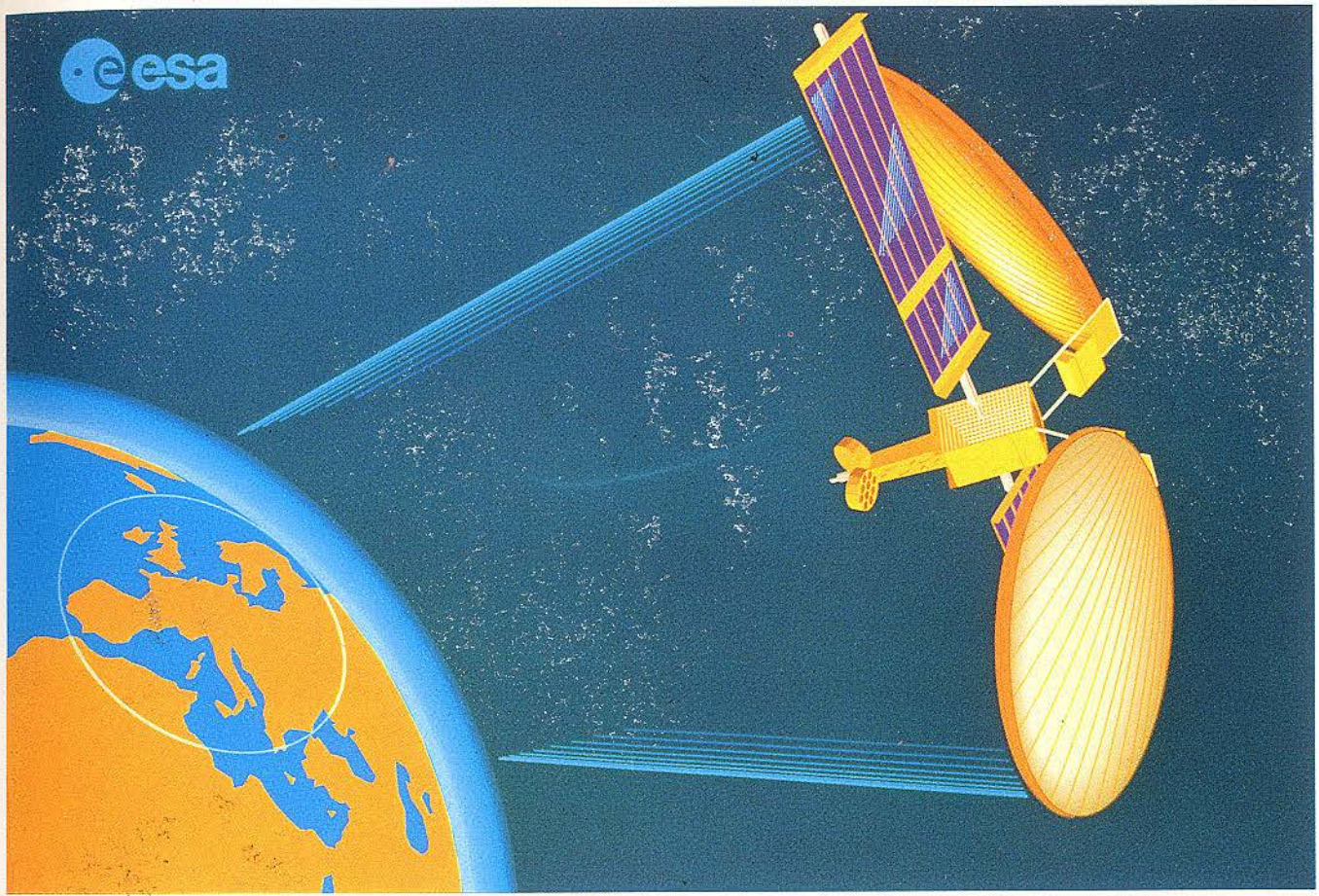
The whole system often finds itself squeezed between the Major Units – erratic and mostly unsatisfied consumers –

A CH 47 helicopter flying with hanging loads. In modern warfare, it is an excellent logistic carrier.



that want more and more of everything, and faster – and the commander, who in the logistic requirements sees serious obstacles and demands an ever increasing commitment to the success of the manoeuvre.

The system, anyway, thanks to an impressive employment of means, allows success, especially when the manoeuvre develops according to pre-established plans. It is affected instead – owing mostly to its weight – by possible variations in the plans envisaged, precisely as it suffers limitations, sometimes unbearable when the lines of communication, along which its transport flows, are not protected from air and guerrilla offences.



A telecommunications satellite. The absurdity of nuclear confrontation leads to new creative efforts and it does not seem wholly science fiction to think about the possibility that traditional logistics could be gradually replaced by space logistics.

A typical example of this is the defeat of Von Paulus' 4th German Army in the battle of Stalingrad.

The strategic mobility which was taken for granted comes again into question. The progressing speed of the motorized and armoured masses suffers an inevitable logistic restraint and is reduced to 10 km per day.

Not only that. After advancing for 30-40 days, the Major Units, in general, must stop, in order to allow the supply bases to move forward.

Thus the balance between strategy, tactics and logistics, which had been so laboriously reestablished, in the '50s becomes shaky again.

ATOMIC LOGISTICS AND...

The studies on the effects of the atomic and nuclear weapons lead to the conclusion that logistics must be adapted to a hard-to-foresee form of war, in which the forces would have to live and fight in conditions that we can barely imagine.

The impact of a possible atomic offence, in fact, immediately influences also the logistic sphere. With the destruction of the Commands at all levels, with the separation of the forces, with the instantaneous annihilation of bases and depots and with the paralysis of the communication lines, due also to radioactive fallout, logistics, which in the second world conflict had attained a high degree of centralization, must necessarily be ready for decentralization.

According to some, every Major Unit should own the means it needs. Others favour a totally independent logistic organization,

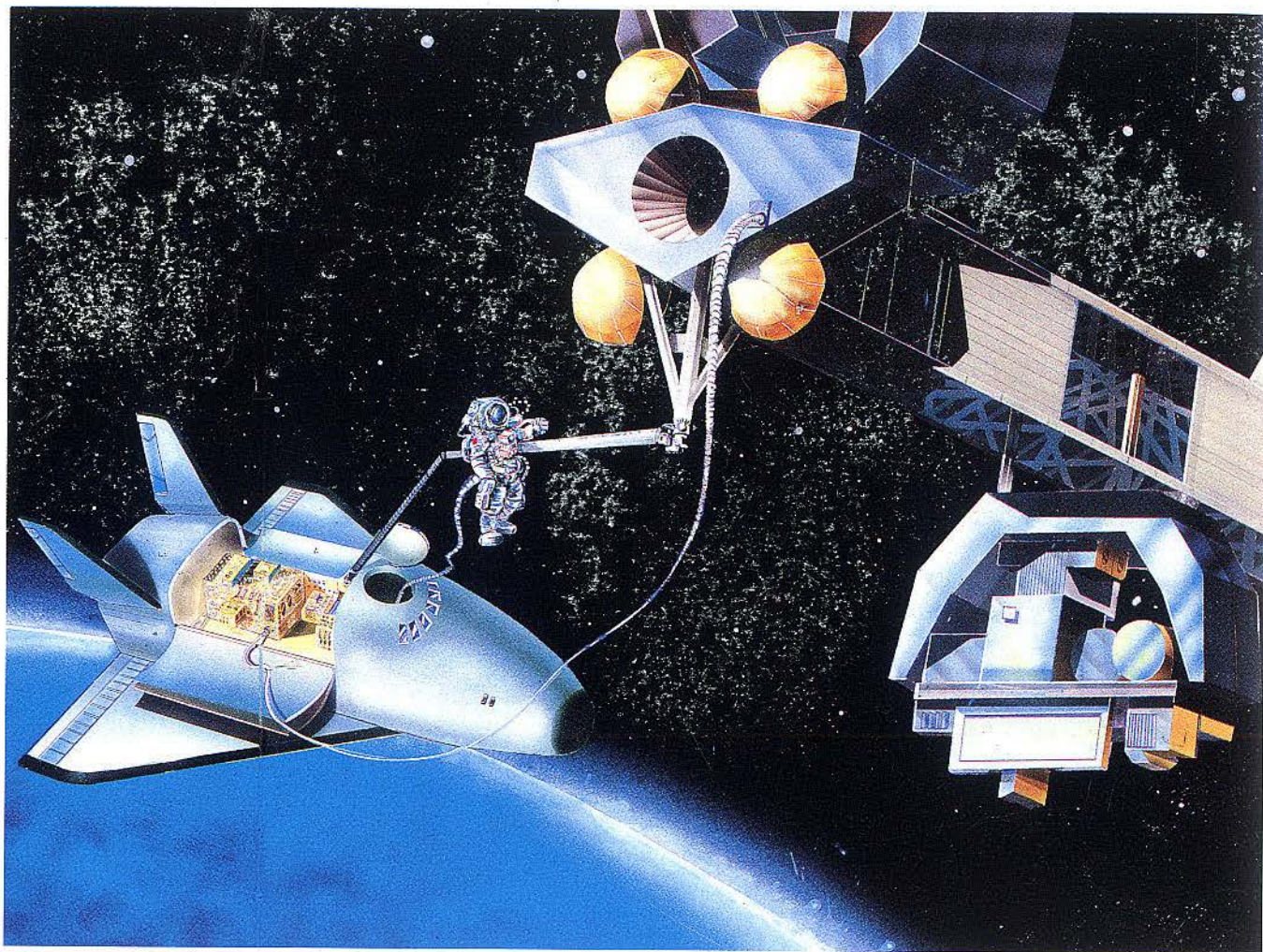
with its own equipment, able to act according to the instructions given by the Commander and the results of the first nuclear exchange.

Some also consider it convenient to rely on multi-service depots and stores, smaller than the ones used in the past, but numerous and spread widely along the front and in depth.

Nevertheless, the immanent danger of interruption of the lines of communication remains, with the consequent asphyxiation of the entire system.

Thus we come to envisage a massive employment of the aircraft, which is considered the only solution capable, at least partially, of doing without a land road system.

As the railroad had been the preeminent means of transportation in the trench war, as was the truck in the motorized and armoured war, so the helicopter appears as the logistic vehicle of nuclear war, together



An intervention at a station in orbit. Studies are already under way to evaluate the analogies, differences, integrations and difficulties of space logistics vis-à-vis traditional logistics.

with, and as a complement of, the air transportation carried out with fixed-wing aircraft.

This short survey of the logistic evolution of the past years should be useful to understand how the new forms of combat, due to the introduction of new weapons or to the updating of the existing ones, were always faced by logistics with the means already at its disposal.

As a consequence, logistics usually had a delayed start, and succeeded in redressing the imbalance it suffered vis-à-vis tactics, and therefore in performing its essential function, only

when it made recourse to new equipment and more up-to-date procedures.

It is therefore in this direction, in this innovative task, that logistics must operate, within the framework of its fundamental principles. Now that the absurdity of an armed nuclear confrontation has promoted new, more or less futuristic visions, and prompts new imaginative and creative efforts, it does not seem "science fiction" at all to think that the logistics of the horse, the railway, the road and that of the aircraft could be gradually and partially replaced by "space" logistics.

What will be its dimensions, its analogies, its differences, its integrations with the current systems? What about difficulties and possibilities?

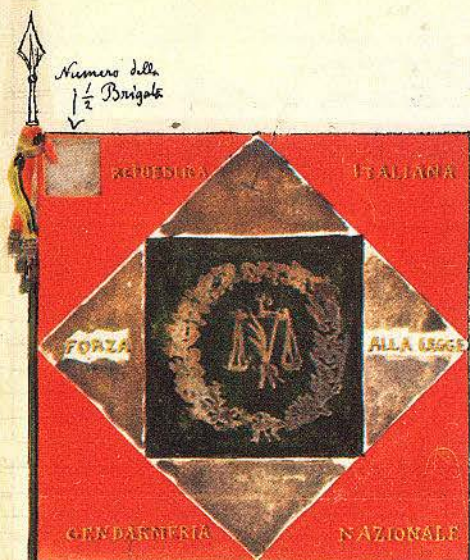
All forecasts move between reality, imagination and fantasy. But the history of mankind

reminds us that these problems have always marked and characterized the progress of man and his civilization.

It is what a well-known writer of military history, Nicola Marselli, indirectly recommended already in 1875, in his work "War and its History":

- "a logistics closely connected with strategy is the vehicle through which the General's mind reaches the tactical action of the troops"; and, further on:
- the study made by logistics must consist in "realizing that every principle should be understood in its essence, and that every rule has its exceptions; teaching, through historical and assumed examples, the skill of bending the abstract through the concrete".

Ciro Di Martino



Numero della
1/2 Brigate



22 Luglio -

Modificazioni all'uniforme
della Fanteria

20 Settembre - Lodovico
colpa all'abito dei Veterani
di Invalidi.

2 Ottobre - Bandiera
verde (come detto a d. c.)

29 Ottobre - 1. Colonna degli Uomini
portano le leggende - Colonna militare

1 Novembre - Nuovi cappotti e giacchette per il Trovato del Governo

12 " - L. 1/2 Brigate Tolacca pass. al servizio francese

23 " - L'uniforme degli Invalidi non ha fillettera

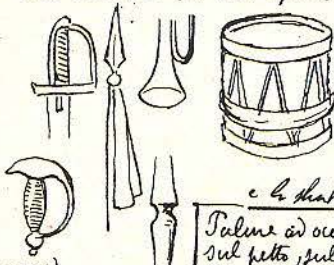
6 Dicembre - Invalidi e Veterani hanno stocchetti lunghi
e loro giacche e bianche con collo e paramani rossi, non

16 Dicembre - Fanteria di Linea hanno cravatte bianche
e cravatte nere.

15 Novembre - Gallonieri stanno gialli per Tolacca

- Settembre - Bandiera tricolore per Cavalieri Tolacca

Da una stampa dell'epoca



19 Ottobre - 1. Uomini

colli, paramani scialli
quanti all'rispina in

gran tenuta, al d. c.

10 Agosto - 2. Uomini

sottintende il pantaloni
bianchi alla scialla attenti.

e la shaki rossa al nero

Tolacca ad occhio
sul petto, sul collo
sui paramani
sempre colorati
Lo stesso ornamento
sulle braccia



(Archivio di Stato di Milano)

La corona di foglia di quercia è intarsiata di tricolori,
con pure la piuma e il nastro.

Torchi la frangia d'argento per sottile per le cantoniere

Sul reversi - sul bianco in alto: Discipline -
a sinistra: Obbedienza

12 Dicembre - La forza della Gendarmeria è
portata a 244 brigate metà a piedi, metà a
cavallo - 1860 uomini.

13 Nuovo Anno X -

Tariffe vestimentari per Cavalieri:

Pelleccia per Uomini 1° e 2° (per ora esiste solo il 1°)					
Dolman	"	"	1° Cacc. a cavallo	Artigl. legg.	
Ciliet	"	"	"	"	
Pantaloni di parata	"	"	"	"	
" di scuderia	"	"	"	"	
Mantello	"	"	"	"	
Cappotto	—	—	—	—	
Sharpa	"	"	"	"	
Abito	"	"	"	"	
Ciliet	"	"	"	"	
Calzoni	"	"	"	"	
Berrettone	"	"	"	"	
Cappello montato	"	"	"	"	
Berretto di scuderia	"	"	"	"	
Cinturone	"	"	"	"	
Giletto	"	"	"	"	
Cinghio di carabina	"	"	"	"	
Sciarpa	"	"	"	"	
Stivali	"	"	"	"	

Trono Artigliere

(si intende shaki all'ultimo)

Trisoli Uomini e Cacciatori - Sulla coperta, Gualdrappa, Valigia, Carabina e pistola					
Anche per Uomini - Stivali all'ultimo					
Cacciatori a cavallo - Shaki, mantello verde, stivali a foderi ferro, quanti all'rispina, piuma, pomponi, cordoni, giacchette, gilet " pantaloni di parata, giacchette e pantaloni di scuderia, stivali verde					
Uomini - Valigia verde - Tornacchio, pomponi, cordoni, piuma per berrettone, mantello bianco, mantello verde, stivali a foderi ferro quanti all'rispina.					
Artigliere leggiero - Mantello verde, stivali ferro, quanti rispina piuma, pomponi, cordoni					

Gendarmeria Nazionale a piedi - Colletto gilet, pantaloni gialli
ghitoni non orlato in bianco, bottoni, buffetteria grigia e d. c. bianca

Dragon bianco - cospicua rossa - giallo - petto regolare, fodra rossa, paramani

rossi quadrati a 2 bottoni

paramani e petto di paramani idem, fodra scialla; tutto flettera in bianco

minuta bottoni al petto - gilet e pantaloni bianchi

paramani e petto di paramani idem, fodra scialla; tutto flettera in bianco

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paramani e petto di paramani idem, fodra scialla; tutto flettera in bianco

minuta bottoni al petto - gilet e pantaloni bianchi

Commissario
Ordinatore della Repubblica

Ufficiale topografo - 1° formata

Abito lungo, verde, bianco a petto

regolare di velluto nero, collo

regolare di velluto nero, collo

regolare di velluto nero, collo

regolare di velluto nero, collo

regolare di velluto nero, collo

THE ITALIAN ARMAMENT



INDUSTRY

REORGANIZATION AND PROSPECTS

THE STRUCTURES

The Italian armament industry, practically nonexistent in the immediate postwar period, in the '70s experienced a wide expansion, especially for two reasons. First: the need to reequip the Italian Armed Forces, which were still using U.S. material delivered free of charge or on extremely favourable financial conditions. Second: the materialization of enormous exporting possibilities towards the Third World countries, a fact that made economically competitive a number of productions which were not justified by the size of the national market.

The expansion of the Italian armament industry occurred without any kind of organic planning and was marked by: extreme fragmentation of the industrial basis also at system level; scarce specialization, especially in the sector of components; technological dependence on the foreign market – on the U.S. especially – and subsequent purchase of licences and of the most valuable components; marked dependence on the export market, with the deriving excessive expansion of our production capability vis-à-vis the national requirements.

In the '70s, owing also to the impulse given by the Atlantic Alliance and the other European institutions, the number of Atlantic and European co-productions and co-develop-

ments increased. Various factors had an influence on this.

First of all, the need to strengthen the conventional defence of Europe, despite the limited defence budgets and the growing costs of the weapon systems. This determined the preconditions for working out what the U.S. Ambassador to NATO, Abshire, called "the strategy of resources". It intends to avoid duplications, share out the more and more onerous costs of research and development, achieve standardization, realize mass-production by rationalization of the Western military market; diminish the European dependence on the United States and obtain a more equitable balancing of the military trade (on the average for the European countries the imbalance is 4-5 to 1; Italy in 1984 imported technology, components and equipment for about 1,400 billion lire and exported for about 300 billion).

Second, a greater international cooperation (and simultaneously, a process of integration within Italy) was made necessary by the technological revolution occurred especially in the field of electronics, but concerning also "new" materials (carbon fibres, for instance). This entailed huge investments in the sectors of scientific research and technology, which exceeded the individual possibilities of each European nation.

A remarkable influence was exerted by the well-grounded concern that the export markets would experience a contraction,

Transport by helicopter of an OTO 105 mm howitzer.

Table A

**Exports of arms from non-industrialized countries
(in millions of 1982 constant \$)**

	BRAZIL	CHINA	ISRAEL	N. KOREA	S. KOREA
1972	0	850	10	0	0
1982	625	1.000	360	480	400

Source: ACDA (Arms Control and Disarmament Agency).

Table B

Exports 1978-1982 (3)

	industrialized countries	NIC	Developing countries	OPEC area
ITALY	3,8	3,2	93	54,8
FRANCE	2,4	5	92,6	44,4
GERMANY	15,5	9,3	75,2	41
UK	16,7	5,2	78,1	36,7

Table C

**Incidence of exports
on the world market 1978-1982**

	ACDA source	SIPRI source
FRANCE	9,0	9,7
GERMANY	3,7	2,6
ITALY	2,8	3,5
UK	6,0	3,9

Source: Stratégique, no. 3/1985.

Table D

**Research and development
(% of military expenses)**

	SIPRI	UN
FRANCE	12,03	11,3
GERMANY	3,09	3,4
ITALY	1,37	1,03
UK	13,02	12
SWEDEN	6,22	5,2

Source: Stratégique, no. 3/1985.

due to various causes. First, the competitions coming from the new armament industries of the NIC countries (Brazil, China, South and North Korea, etc.) particularly threatening to the Italian industry, owing to the lesser solidity of its technological basis (Table A). Second, the risk of a massive entry of Japan in the world market of armaments. Third, the world economic crisis and the reduced funds available to Third World countries, to which the bulk of the Italian export is destined (Table B) (1). Fourth, marked saturation and ever increasing sophistication requested by the foreign customers (in the past, the materials exported to the Third World countries were of the older generations; in the eighties this exportation has often preceded the supplying to the European armed forces, although lately there has been a reverse in the trend, due to the diminished money availability of the importers and their difficulties in logistic support). The situation of the Italian armament industry

is summarized by the following data:

- in 1984 the sales exceed 7,000 billion lire, 4,000 of which destined to export; the employees are approximately 80,000; production is about 4% of all manufacturing industries and exportation percentage is about the same as that of the overall Italian exports (2);

- Italy stands between 4th and 6th place (depending on the reckoning systems) as exporter of arms, but is the third importer among the industrialized countries, with a bulk of imports of more than 2,300 billion in 1984 (1,400 of which from the United States) (Table C). The most recent assessments by SIPRI approach the ACDA estimates, placing the Italian presence on the world market of armaments at a level below 3%, i.e. 6th in the world;

- the industrial basis is extremely fragmented: in the aircraft sector, the largest Italian firm totals about one seventh of the global sales recorded by the largest European industry, and

in the electronic field the sales are about one thirtieth;

- for research and development (Tables D and E) in the military field, Italy spends proportionally much less than the other European countries (especially France and Great Britain), compared both to the expenses for national research and to the military budgets in general. On the other hand, in the last years the outlays for this sector in Italy have shown a noticeable upward trend. One must observe in this regard that the technological development in the military sector is extremely rapid. Consequently, the expenses for research and development weigh more and more heavily on the military budgets. In the sixties, the research and development for the main weapon systems had an incidence of approximately 10% of the global cost; in the eighties this weight has grown

Right.

"OTO C 13" combat vehicle, armed with a 25 mm gun.



Table E

**Military research
and development
(% of national R & D)**

	Average 1979-1983	1983
FRANCE	33,2	35,6
GERMANY	9,4	9,6
ITALY	6,1	5,1
UK	50	50,5

Source: Stratégique, no. 3/1985.

Table F

International cooperations

	Number of cooperations	Co-developments and co-productions	Purchase of licences
With the U.S.	32	7	25
Within Europe	30	16	14
Total	62	23	39

averagely up to 25-30%, with mass production gauged on a break even point, generally considered by the armament industry at 50% of the technical life of the equipment. It goes without saying that the incidence changes with the size of production. The growing cost of research and development is

a big incentive to international cooperation;

- the Italian exports (excluding co-developments and co-productions) and the European ones in the period 1978-1982 have been destined as indicated on Table B;
- as regards the 62 main inter-

national cooperations in the European and Atlantic area in which Italy participates, the Italian position is indicated on Table F. Table G shows the cooperation agreements listed in accordance with the various production sectors. It can be noticed that the Italian position is extremely weak in key sectors

Table G

Agreements of the Italian industries for international cooperations (1984)

Partner	Air-craft	Heli-copters	RPV	Mis-siles	Ships	Tanks	Self-prop.	Howitz-ers (1)	Engines	Radar	Sonar	Electric Equipment	Total O	Total X	Total OX
France				X									/	1	1
France-Germany				0									1	/	1
Germany						0		0	0	X		0	4	1	5
Germany-UK	X						X	X	X			X	/	5	5
UK		X						0	0000X	0XX		XX	6	6	12
Holland										X			/	1	1
Sweden								0					1	/	1
USA		00000X						0	000000X	0XXX	000X	000000	22	6	28
CDN									0X				1	1	2
Brazil	X												/	1	1
Inter.				00	X								2	1	3
Total O	/	5	/	3	/	1	/	4	12	2	3	7	37		
Total X	2	2	/	1	1	/	1	1	4	7	1	3		23	
Total OX	2	7	/	4	1	1	1	5	16	6	4	10			60

Notes: Licences = O; Co-productions = X. (1) Including cannons and heavy machine-guns.

Source: M. Nones: "Prospects of cooperations of the European military Industry", IPD no. 6-7-8, April 1985.

Table H

Military Expenses

Country	In million dollars	Per capita	% GNP
ITALY	8,7	153	2,5
FRANCE	22	408	4,1
W. GERMANY	28,4	461	4,3
UK	24,2	432	5,1
SWEDEN	3	412	3,3

Source: Military Balance 1983-1984.

Table I

Structure of 1981 military expenses (in national currency)

	Civ. & Mil. personnel	"Working"	Procurement	Infra-structure	R & D
FRANCE	48.331	33.176	27.382	5.198	15.135
W. GERMANY	16.824	12.036	10.719	1.907	1.562
ITALY	1.545	2.678	2.083	556	99
UK	5.026	3.943	3.763	2.718	1.667
SWEDEN	5.369	4.223	5.855	1.099	957

Source: UN 1983.

such as motors and electronic components.

The Italian cooperations with the United States are approximately 40%, with the United Kingdom about 20%; the Federal Republic of Germany is our third partner. The rate with the United Kingdom is on the increase while that with Germany is expected to diminish. The relation with the United States is one of total dependence, while that with the other European countries is more balanced, although a reliable evaluation should take into account the technological quality of the Italian contributions, and not merely the quantitative data. Owing also to a scarce decisional capability (belated entry into international cooperations, with consequent limitation to marginal technologies) and to the national inadequacies as regards negotiations and administrative procedures (vis-à-vis financial warranties and fund assignments, our times are incompatible with



A towed, air-droppable 105 mm howitzer during an exercise conducted by Alpine units.

those of the other countries) there is a feeling that the Italian situation is far worse than what appears from the extremely aggregated and reductive data reported above.

The prospects of the Italian armament industry are rather worrying, as shown by the export slowdown occurred after 1982, caused also by the enormous expansion of the French exports which are helped by unlimited political support. The situation could become tragic at the end of this decade, especially if the Middle East markets undergo a contraction, the Japanese enter the world market of armaments and the U.S. takes a hard stand. We are extremely dependent on the U.S., both for licences and purchase of sophisticated components, for the transfer of strategically critical technologies not only to the Eastern Bloc but also to the Third World;

- in the military sector, Italy spends much less than the other countries, as shown on Table H.

But what characterizes a military budget is not only its size but also the destination of the various expenditures. Also in this connection the Italian position is not among the best, as shown by Table I.

Noticeable improvements have been made starting from the late seventies, when the so-called "reappraisal" of the military budget took place. The working expenses have been reduced, while the investments have increased from 12-15% to 25%. This is the result of a special bill passed by Parliament, providing for the modernization of the Armed Forces, together with a military planning more incisive than in the past.

PROSPECTS OF IMPROVEMENT

Faced with these challenges, which have been amply illustrated at the National Conference on the Defence Industry in July 1984, it is neither easy nor painless

to find a remedy. Apparently the only solutions are:

- a very intensive process of concentration and specialization of the industrial basis. This must not only consist in a process of financial concentration (as, in substance, it has been up to now), which never selected major orders with capabilities at system level, nor specialized its industries at subsystem and component level;
- an effort, more marked than in the past, in the sectors of research and development, especially in the sector of innovations and not only and simply in that of imitations, which often turn out to be mere epidemic italianizations of licences purchased abroad. Military R & D must be rationalized, starting from its decisional structures and must be complemented with civilian



"OF 40" combat tank, armed with a 105 mm gun.

technological research and development; in this regard, the problem of an "horizontal" transfer of technologies appears to be crucial;

- rationalization of the customer, i.e. Defence, and its better integration with the "fora" where the policies concerning industry and scientific and technological research are determined. We need a long-term policy in order to choose the sectors on which resources for the acquisition of new capabilities can be concentrated, and a more organic and stable military planning, integrated with the prospects of international cooperation and export;
- transfer of a considerable slice of the Defence budget from the working sector to the investment sector. Such "reshaping" of the military expenses appears indispensable, especially as regards the land forces,

which suffer from chronic underfinancing and remain structures with high-density, low-specialization manpower;

- a more lively competition among industries on the national market. This is currently made difficult by the extent of the state-owned sector (IRI and EFIM cover more than 45% of the sales) and also because it is difficult for the government to effectively play, simultaneously, the dual role of purchaser and producer. Distortions are inevitable, especially in a system of fragmented decisional responsibility, such as the Italian system;
- a more organic vision of the problems regarding the international economic relations as well as the European and Atlantic cooperations. Given the increased international integration for the major armament programmes, a global planning of the international partnerships becomes essential, in order to avoid imbalances and underrating.

THE TECHNOLOGICAL REVOLUTION IN THE ARMAMENT SECTOR

The crucial factor in the renewal of the industrial basis of Defence is constituted by technological innovations. Technology is undergoing a particularly dynamic development, which will probably cause deep modifications in the future weapon systems, especially in the land and anti-aircraft ones. This process has become apparent at the beginning of the '70s and is experiencing a considerable acceleration (shifting of the battlefield towards the service sector, with the new C3I systems – Command, Control, Communications, Information – and the so-called "smart weapons"). Technological innovations are becoming a crucial element, both in order to limit the enormous dependence on foreign technology and to participate in the European and Atlantic cooperations on a level of sufficient parity, as well as to remain in the market of



exports towards the Third World and, finally – and this should actually be the main reason – in order to meet the needs of our own Defence.

A resolute effort should be made, first of all, towards the rationalization of the public purchaser. The State is the only customer that can plan and finance wide-range, long-term programmes, also in relation to the chronic undercapitalization of the Italian industry and its low self-financing capabilities. Only the State, moreover, could start the selection process which is indispensable for promoting industrial concentration and specialization. The state interventions are often made outside the interests of Defence, they are too dispersive, and simply aim at protecting the levels of employment keeping an oversize production basis without even trying to modify it, and sometimes they have the sole purpose of serving contingent interests. These are inconveniences that also occur outside the sector of military

industry, no doubt about it, but they are particularly important in that area, owing to the evolution of the present situation and to the fact that the State is the main customer of this market. The monoxonistic nature of this sector, which constitutes a potentially positive element for rationalization, turns into a negative factor if distorting elements appear, due to the lack of the regulating power of the market.

Structures and methods must be established which can enable us to achieve synergies between technological innovations in the civilian and military production, with organic industrial and research policies. Our efforts must be directed towards innovative technologies – innovations in products rather than innovations in processes – adequately sorting out the sectors in which the scarce human and financial resources at our disposal can be concentrated. The human factor is essential for Defence as well as for Industry and Research. Their present

"M 109 L" self-propelled 155 mm gun, capable of firing "HE" shells with a maximum range of 26 km (30 km with special shells). The cannon can also employ the new "FH 70" standard ammunition.

deficiencies are particularly critical, and derive also from the inadequacy of university and professional training. Not only do we have to send many researchers and engineers to attend specialization courses abroad, but we even import technicians and engineers. The situation of the Armed Forces is particularly critical owing to the mass resignation of officers of the technical Corps, often trained abroad at very high cost. The goal is not easily attainable. The shaping of both an industrial policy and a policy of technological innovation is always difficult, considering that it is necessary to overcome short-term, contingent and deep-rooted interests. The short-term interests are protected with incoherent interventions, mostly aimed at complying with the

employment prospects or the export plans of the moment, i.e. commercial goals rather than intention of consolidating and strengthening the industrial and technological basis; objectives that belong to the present rather than to the future.

The state interventions have subsidized limited productions, in competition with the productions of the major industries, artfully maintaining the existing industrial fragmentation instead of promoting concentrations through the exclusion of industries that are not competitive or which have an inadequate productive and commercial basis. There has often been an inclination to second the tendency of many manufacturers to prefer the easier (and more profitable) exportation to the Third World (often partially subsidized with public money and conditioned by the import of licences and the most sophisticated components) instead of promoting competition, technological updating and qualified participation in the major European and Atlantic cooperations, as well as our presence on the markets of the industrialized countries, which is undoubtedly a more difficult and exacting way. There are policies that certainly lower the immediate profits but constitute the matrix of rationalization, of strengthening, of greater solidity of the industrial sector under consideration and of a decreased technological and strategic dependence on other countries.

The time at our disposal is rather short. Often we talk about the challenges of the '90s. In this particular field this is not the only question; it is also, and above all, a matter of reaching the '90s. This will not be possible if the resources continue to be destined to subsidy-type and conservative interventions, employed in aging technologies and sectors, in which, foreseeably, we shall be unable to counter the NIC competition and which are in any case characterized by low added-value. We must resolutely aim toward innovative sectors and,

as the saying goes, sacrifice, if necessary, the present for the future.

There is a constant and notable increase in the funds earmarked by Defence for research and development, both in the national field itself and in that of international co-operations (4). Nevertheless an organic plan for technological innovations in the armament industry sector is undoubtedly still wanting, and often we act on the spur of the moment, bending to contingent pressures. The rate of increase of the allotments destined to research and development will not rise as it should be necessary, especially if the military budgets were to stay at zero growth, instead of maintaining the upward trend followed in the past years. Actually, there will be an inevitable, and practically uncontrollable and incontestable, tendency by Defence to concentrate resources on procurements instead of technological innovations. Considering the scarcity of the global resources of Defence, the funds allocated for investments could indeed be eroded by the working expenses. As a matter of fact, also these expenses will show a marked tendency to increase. The weapon systems' maintenance cost is proportional to that of their acquisition. The weapon systems introduced in the late seventies are still kept in working condition, partially at least, with the spare parts acquired at the time of their procurement.

Moreover, the means received or purchased from the United States, and about to be withdrawn, are currently kept in operating conditions by drawing from the spare parts of the operational stocks. When these will run out, which will occur within a short time, the working expenses will show a tendency to increase. In this regard the Defence budget is still far from reaching a balance. Nevertheless, an equilibrium between the purchase of the new and the upkeep of the old (as well as the maintenance of

structures exceeding our actual financial resources) will have to be attained; failing this, the consequence would be a collapse of the organization, obviously if the funds allocated for Defence were to have no increment.

The Ministry of Defence, together with the Ministries of Industry and Scientific Research, should work out a detailed, long-term (15-20 years) research and development plan. Moreover, the funds for the implementation of this plan should be given high priority. The working organization, the number of personnel, and especially the structures of the supporting bodies should be sacrificed in favour of renewal and innovation. This seems to be the only system apt to maintain efficiency and achieve the improvement of our military instrument and the industrial sectors connected with it, instead of just fighting a rearguard battle aimed at guaranteeing the survival of the present structures.

Given our financial inadequacies, to start large programmes, especially at international level and with costs that eventually surpass all estimates, appears equally dangerous. These programmes risk to distort the military expenditure, focusing it on very advanced major weapon systems which are not adequately supported by complementary programmes, which in reality are essential to attain a real operational capability. Unfortunately this is the policy which has often been followed up to now, also in relation to the deficiencies accumulated in the past. This has required a remarkable increment in the Defence investments, polarized on *major equipments*, which have been allocated amounts disproportionate to the funds allotted to *procurement*.

After this outline, which is undoubtedly less than encouraging, there remain to be mentioned some symptoms of improvement and the sketching of a policy fostering technological innovations in the military sector. This policy, still

fragmentary, shall have to be better integrated with the more comprehensive national policy regarding this sector. A policy which, in any case, has considerable flaws, as regards both organic unity and incisiveness.

First of all, the increased responsibilities of the National Armaments Director will probably confer more systematic coordination to the propulsive action of Defence. Certainly, for the measure to have a real impact, such responsibilities will have to be matched, on the one side, with an actual authority to impose major technological choices and on the other, by the ability to exert such authority, having control of an interservice technical Corps, that should be greatly reinforced, also envisaging the possibility to hire civilian temporary advisers, in order to make up for the scarcity of military ones and to avoid excessive dependence on the research divisions of the industries.

Second, the reactivation, since August 1984, of the Defence Industry Committee, may have a beneficial influence. This organization is going to be really effective if it makes long-term choices, which are altogether the most important, instead of making short-term ones, even if they may appear more significant under the particular circumstances.

Third, an increase in European and Atlantic cooperations is under way in the sector of technological innovation. In Europe there is the increasingly widespread conviction that without an overall improvement of the technological foundation of the European armament industries, not only will it be impossible to achieve a more balanced relation with the U.S., but the European dependence will undoubtedly grow and in a time shorter than is generally believed. This question has been concerning the IEPG (*Independent European Program Group*, which includes also France) which has promoted

multinational European researches extended to about thirty top-level technological fields (CTP - *Cooperative Technological Programs*) which are supposedly going to dominate the late-century military productions. Within the Atlantic framework, Italy actively participates in the research and development sector of the so-called emerging technologies developed within NATO, in accordance with the proposals formulated in 1982 by the U.S. Secretary of Defence Caspar Weinberger, managed by CNAD (*Conference of National Armaments Directors*) and rationalized in a more organic picture by the proposal made by the U.S. Ambassador to NATO, David Abshire, with the already mentioned "strategy of resources". The emerging technologies are in reality already emerged and partially even ripe technologies, whose perfecting and application are indispensable for the construction of the weapon systems and the command, control and information systems of the '90s.

Finally, many Italian industries have expressed their willingness to participate in the SDI (*Strategic Defence Initiative*). The Italian action cannot have much of an impact, if it is not included in a global agreement at government level. The agreement should be concentrated chiefly on the determination of sectors in which Italy can benefit from technological returns that can be utilized within the country, in order to acquire a capability at system or subsystem level. These capabilities are essential in order to proceed from research to relatively autonomous productions, and in order to avoid being driven to the quite subordinate position of subcontractors for the production of single components or simple parts. Failing this, the participation in SDI will be only of secondary interest, not only economically, but also from the technological, industrial and military point of view.

In conclusion, it can be said that these international partnerships are necessary but not sufficient. In other words, they are no substitute for, but only complement of, the national efforts in the field of technological and scientific innovations. As always, one's own problems cannot be solved by others. Also the returns are proportionate to the efforts made: the wider the difference that separates us from our partners-competitors gets, the greater must be the efforts.

PROSPECTS OF RENEWAL OF THE ITALIAN ARMAMENT INDUSTRY

The implementation of an industrial policy, be it general or sectorial, is always extremely difficult. It is in fact always hindered by the existence of deep-rooted interests which make it difficult and can eventually even block it, especially when the public power has scarce intrinsic capabilities of planning, implementing and imposing it, as is the case in Italy. As Dr. Romiti said at the National Conference of the Defence Industry, one must keep away from too ambitious projects and objectives. The State must proceed in an essentially pragmatic way, with actions that should be spurs rather than directions, with a policy of contracts and allocation of financial incentives rather than with the imposition of abstractly rational schemes, which inevitably would become a dead letter, having no other purpose but themselves. This does not mean, of course, that goals and general guidelines should not be established, also in order to prevent pragmatism from becoming mere empiricism or from serving only to camouflage arbitrariness and the inability to make choices and take decisions. An essential prerequisite is, as we said, the shaping up of an adequate policy of government contracts; in short, a sufficiently stable, reliable planning, realistically



viable vis-à-vis the foreseeable level of resources. This policy must first of all inform about the major modernization projects of the Armed Forces, the operational specifications that must be complied with, the levels of standardization that must be achieved in the European and Atlantic areas, the deadlines and the size of the acquisitions concerning the major weapon systems, as well as other Defence systems (command and control, communications,

management of information, etc.). The funds appropriated by the State for technological innovations and industrial conversion should be destined to these projects, and concentrated on a few main contractors in the various industrial compartments concerned. These firms would autonomously rationalize the subcontracting sector by selecting and specializing the subcontractors, i.e. they would somehow complement the role of the Government, which at the

The "Palmaria" 155 mm self-propelled gun is a high-performance weapon capable of delivering large quantities of fire in counter-battery and interdiction actions, as well as in support of the combat units.

present time cannot carry out a proper direction-and-control action or, let us say, a steering action and, least of all, play a management role.

This picture could be the starting point for encouraging the establishment of consortia

with concentration of main contractors and specialization of minor firms. The process, in order to be effective, must develop spontaneously or be at most spurred by "soft" steering rather than be imposed from above. In particular, Defence should manage to stimulate competition in order to effect a selection and encourage improvements in technology and production.

Finally, one must avoid "ad hoc" public interventions meant to keep alive bankrupt industries by artfully maintaining duplications, contradicting the fundamental goal of promoting concentrations, especially at system level.

Experience shows that our industry is quite conscious of the fragility caused by its fragmentation. In fact, consortiums have been created both for carrying out major programmes and for rationalizing longer-term industrial and technological policies. Examples of this are the consortium established for the CATRIN Programme, the FIAT-OTO Melara agreement for the construction of a 2nd-generation Italian tank and, lastly, the partnerships formed around main contractors for the participation in the major international programmes of research and development, such as CTP and ET or the participation in the SDI. The previous forms of partnership of the ANIE and AIA type, with the exception perhaps of the so-called Melara Club, have essentially the aspect of category groupings with very slim chances to promote an actual reorganization, which can be accomplished only if it is based on major projects having concrete financial prospects.

As we have mentioned, the negative examples of contingent, subsidizing interventions continue. They are perhaps diminishing if compared with the past, owing to more *deregulation* also in the sector of the armament industry and the higher standards of efficiency and productivity, which check the sectorial subsidizing trends of public intervention. Given the

difficulty to plan a national policy in this sector – a global, organic and well-aimed policy – and still safeguard the necessary flexibility of the industrial sector, the establishment of consortiums produces more organic unity and will very likely facilitate the desirable future formulation of a more incisive national policy, which, sooner or later, will have to be implemented, if for no other reason because of the force of circumstances. In the armament sector, this action by the government should be easier, especially because the orders are a government monopoly, albeit somehow reduced by the peculiar structures characterized by the already mentioned "widespread and often inconsistent responsibility" of the Italian public system.

It can be said that, until now at least, the industry's reorganization effort has not been matched with an equally effective improvement of the government's procurement organization, which is the crucial strategic element of military restructuring and betterment. The recent bill on the reorganization of the military leadership, with greater power to the National Director of Armaments, will considerably help to improve this sector. The autonomous action of the industries can actually attain goals which are certainly important but have many intrinsic limitations. A real leap in rationalization will be made possible only through a government action of the kind described above, a stimulating, clarifying action as regards both objectives and destination as well as times of appropriations. This is not state control or rigid planning from above: everyone must play his part. The industrial system must be allowed to organize itself in the most effective way, without being distorted by interventions that affect free competition among the enterprises. But without defining the general aims, without determining the financial picture of the public interventions and without activating a greater competition

among industries, it will be difficult to create the preconditions for an effective industrial organization, and enable the Italian armament industry to strengthen its foundations and face a future made difficult by both the enormous acceleration of technological progress and the lively dynamics of foreign competition.

Maj. Gen. Carlo Jean

NOTES

(1) According to the "Congressional Research Service" of the Library of Congress, the orders from the Third World have gone down from 46.2 billion in 1982 to 24.7 billion dollars in 1983 (R. Grumet: "Trends in Conventional Arms Transfers to the Third World by Major Suppliers 1973-76", Washington DC, 1984, p. 16). According to the same source, the role played by the new suppliers is destined to increase notably:

- between 1976 and 1979, 65% of the market was covered by the United States and the Soviet Union, 24% by the EEC countries and 11% by other suppliers;
- between 1980 and 1982, the US and USSR quota fell to 53% and that of the new suppliers increased to 23.5%, equal to the European share;
- in 1983 the new suppliers reached a share of 30% while Europe fell to 14.5% (nevertheless, in 1984 and 1985 the European sales have reversed their course, with a real explosion of the French exports).

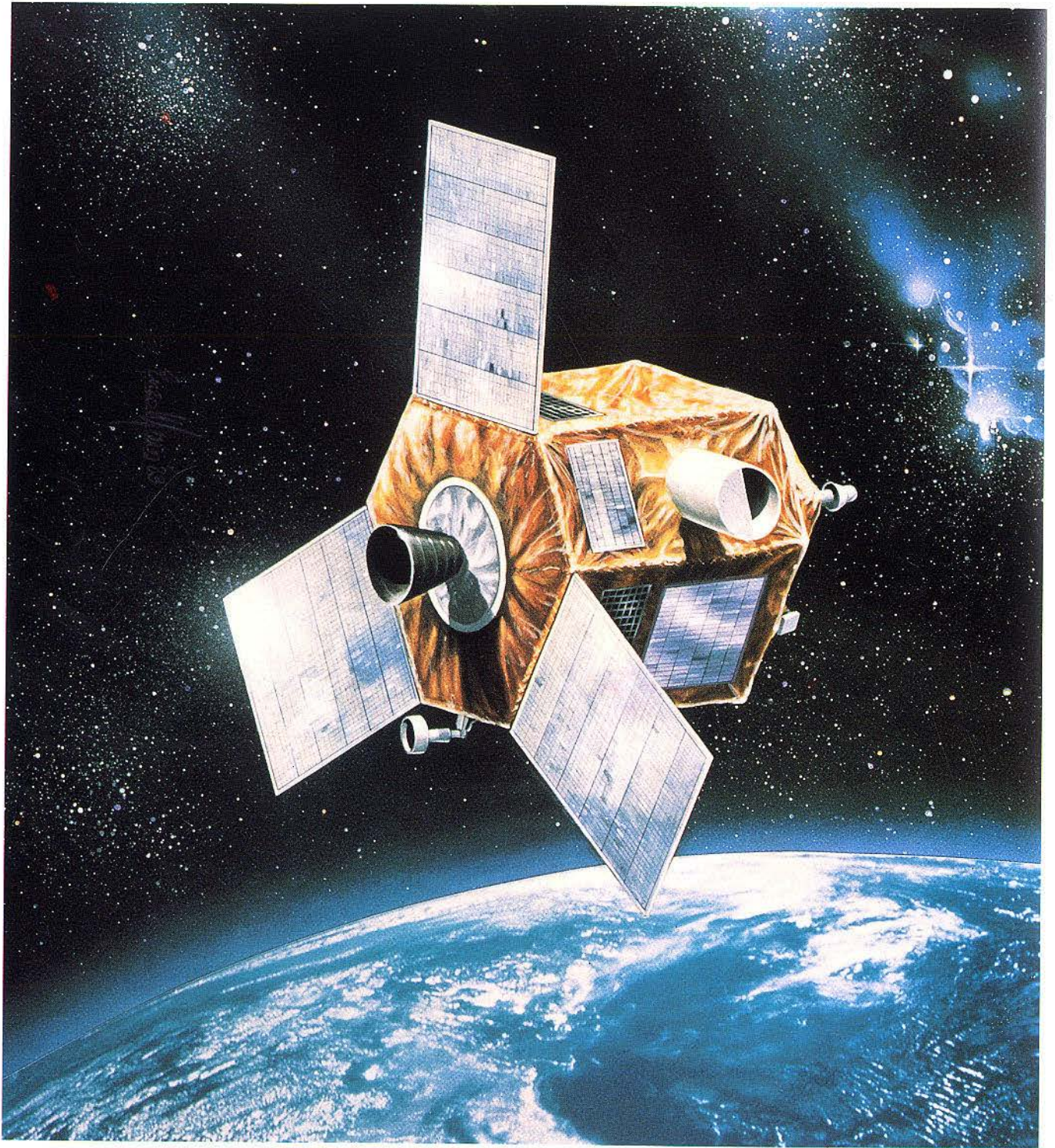
According to the mentioned US report, the world export market has been characterized by the appearance of private exporters, who operate especially in countries at war or which have a complicated political situation (Gulf, South Africa, Lebanon, Latin America, etc.), at the edge (or in the shade) of the governments; they export mainly munitions, spare parts and second-hand weapons. Their market quota cannot be properly evaluated, but the estimates are of a few billion dollars a year.

(2) Figures supplied by the Ministry of Defence during the National Conference on the Defence Industry (Rome, 3-4 July 1984).

(3) Elaborations by M. Nones on ACDA data "World Military Expenditures and Arms Transfers 1978-82", April 1984, IPD no. 6-7-8, April 1985.

(4) In 1985, military R & D has absorbed approximately 400 billion lire of the Defence budget, plus 200-300 billion from the IMI fund for technological innovations, the MICA rotation fund, funds coming from special sectorial provisions and from the defence industries' self-financing, which is charged on the selling price of the equipment.

THE CONQUEST OF SPACE



If we let our thoughts linger over the course of history, we notice that very few scientific events have imparted a decisive turn to the advancement of mankind.

Among these, besides the discovery of fire, the invention of the machine and control over the atomic energy, we must include the conquest of space.

This goal is no more an unattainable dream or a product of the imagination: it is an undeniable reality. The space age is here already. In less than thirty years man has overcome the force of gravity, reached outer space, landed on the moon, launched into orbit thousands of satellites, began to explore the solar system and started to make the first steps towards the industrialization of space.

The course is irreversible and cannot be stopped, because it represents a stage in the unrelenting progress of mankind, and also because it has absorbed most of the intellectual brain and financial resources of the major industries in an unprecedented technological challenge.

This is a worldwide challenge, in which not only the major powers (the United States and the Soviet Union) are involved but, with ever increasing determination, also Europe – which has created a Space Agency for this purpose – Japan, China and India, while other nations such as Canada, Australia, Indonesia, as well as the countries of the Arab world, Africa and Latin America use, for what they need, the organization established by the leading nations.

The challenge, on the other hand, is amply justified, because the conquest of space implies a tremendous leap forward in technological progress, which, if we examine the matter closely, has always been the determinant factor in the economic growth of peoples and in the political

influence they have been able to exert.

THE SATELLITES

When in October 1957 the first Soviet "Sputnik", an aluminium ball weighing about 83 kg, began orbiting the Earth, we were very far from imagining what was going to happen within a few years.

Up to this day, between manned and unmanned satellites, probes, space stations and space laboratories, more than three thousand spacecraft have been sent into space, and the influence they exert on many human activities is very significant.

According to the tasks carried out, the satellites have been divided into various categories: satellites employed in astronomy, telecommunication, scientific and meteorological activities, rescue, navigation, study of the Earth's resources and, last, military satellites, even though we must admit that the military component has been present in space enterprises since their very beginning; actually we can say that, as in almost all scientific innovations, it has acted as a catalyzing element.

Astronomy satellites

As is known, all information about the universe reach us mainly through the electromagnetic waves emitted by stars and interstellar matter.

But the bulk of these radiations does not reach the ground, because it is absorbed or reflected by the atmosphere. Only radiations with a wave length between 0.4 and 0.7 micron (light waves) and between 20 mm and 20 m (radio waves) can be perceived by us.

These intervals are called "windows" because through them we can observe the universe. But they represent only a very small part of the electromagnetic spectrum. In order to pick up radiations of lesser amplitude, i.e. ultraviolet, X rays,

gamma rays, and those of greater amplitude (infrared) we must travel beyond the atmosphere (see diagram).

This is what astronomy satellites have been doing. Since the discovery of the first source of cosmic X rays (i.e. those not coming from the sun), made in 1962 by a probe-rocket, satellites have been sent into orbit, equipped with instruments capable of systematically studying the universe in those parts of the electromagnetic spectrum which are invisible to the human eye. Their main purpose was to create maps of the sky, drawn not only from what was visible but also according to observations in the field of X-rays, gamma rays, ultraviolet and infrared rays, which could be integrated in a single, even more detailed chart of the universe, in order to obtain a deeper knowledge and better comprehension of the phenomena occurring in outer space.

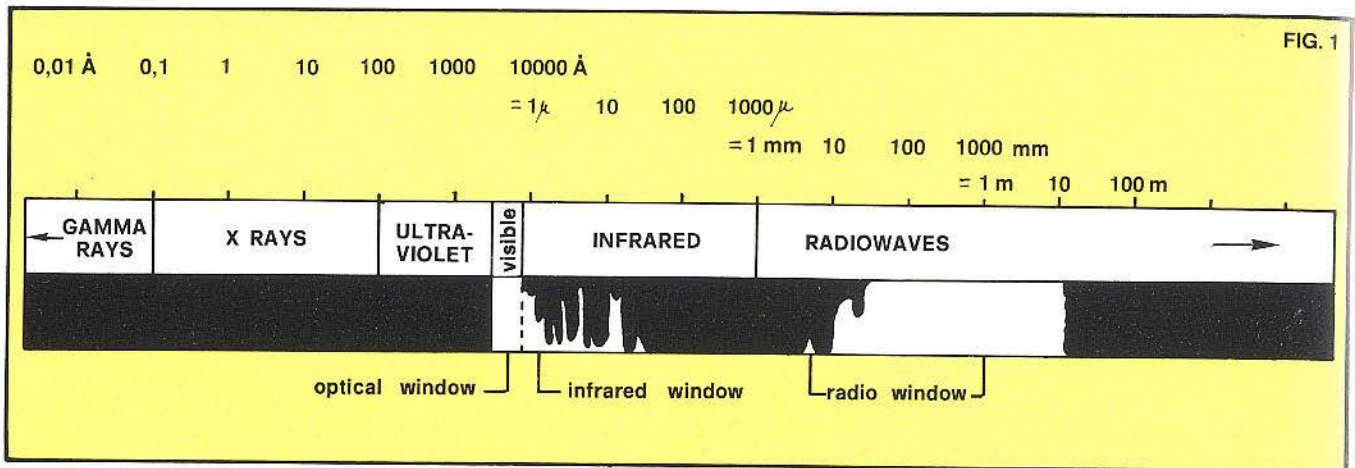
Through these observations we have discovered that the universe is far from being a calm and serene place, peopled by stars immutable in their perfection and harmony, as conceived by Aristotele, but is instead dominated by explosions, collapses, cataclysms, which send out huge quantities of energy causing uninterrupted transformations and continuous movement.

The satellites of the Sas class (Small Astronomy Satellites), the Oao class (Orbiting Astronomical Observatory) and Heao class (High Energy Astronomical Observatory) – the most famous of which were: "Uhuru" (X rays), "Copernicus" (ultraviolet and X rays) and "Einstein" (X rays) – together with the "Iue" (ultraviolet), "Iras" (infrared) and "Cos-B" (gamma rays) satellites, by slowly and systematically exploring the sky and locating the sources with sufficient precision, have supplied an extraordinary amount of information regarding galaxies and galaxy masses, nebulae, comets, births and deaths of stars, solidification of planetary

Left.

The "Hipparcos" satellite.

FIG. 1



systems, explosions of supernovae, pulsars, black holes, quasars, etc.

In particular, a catalogue has been completed which includes 130,000 stars, 20,000 galaxies, 50,000 dense objects, 250,000 X ray or infrared-type sources.

Around Vega, a ring of solid particles has been detected, which would constitute the phase preceding the birth of a solidifying planetary system.

At a distance of 3 billion light-years, 6 galaxies have been discovered; they have the size of our Milky Way, but the energy they emit is a hundred times as much. Beyond Pluto's orbit, the apparent traces of a tenth planet of the solar system have been observed.

The Sas 2 (gamma rays) data have further validated the cosmologic hypothesis, according to which the universe is made up by regions of matter and antimatter.

It has been possible to demonstrate that hot supergiant stars lose each year, owing to the action of stellar winds, cosmic material equal to one hundred thousandth of the solar mass.

Moreover, in the interstellar space, traces of deuterium have been noticed. Since this hydrogen isotope cannot derive from nuclear fusion (the stars' motor), the deuterium could have remained from the "Big Bang", the great explosion which 17 billion years ago gave birth to the universe, therefore adding

weight to this theory. Many possible "black holes" have been found, one within the constellation of the Cygnus, another near Scorpio, a third within the NGC 4115 galaxy, with a mass 100 million times that of the sun, and a fourth at the centre of the Milky Way, with a mass a thousand times that of the sun.

Some "quasars" have been detected and we have been able to determine the velocity of one of them, OQ 172, as it speeds away from our galaxy. It was equal to 90% of the speed of light thus confirming that quasars are the farthest objects observed by man.

But a decisive turn in cosmic exploration will be the launch into orbit of the Hubble Space Telescope (ultraviolet, visible and near infrared).

Hubble is a telescope of 2.4 m diameter, fitted with five instruments (2 special cameras, 1 photoelectric photometer and 2 stellar spectrographs) that make different observations on every celestial object, with a sight accuracy of 0.007 arc seconds. It will enable us to study galaxies distant 14 billion light-years, i.e. very near to the end of the visible world, where hitherto only quasar or exceptionally luminous sources (probably accumulations of billions of stars) had been detected. Hubble, moreover, will have the capability to distinguish objects at distance of 1/10 of arc second from each other, i.e. 10 times the power of the Soviet

telescope (6 m of diameter) of Mount Pastukov in Northern Caucasus, which is the biggest in the world. This instrument cost 1.2 billion dollars and it took 7 years and 4 million man-hours to set it up.

Among the tasks entrusted to this jewel of technology there will be:

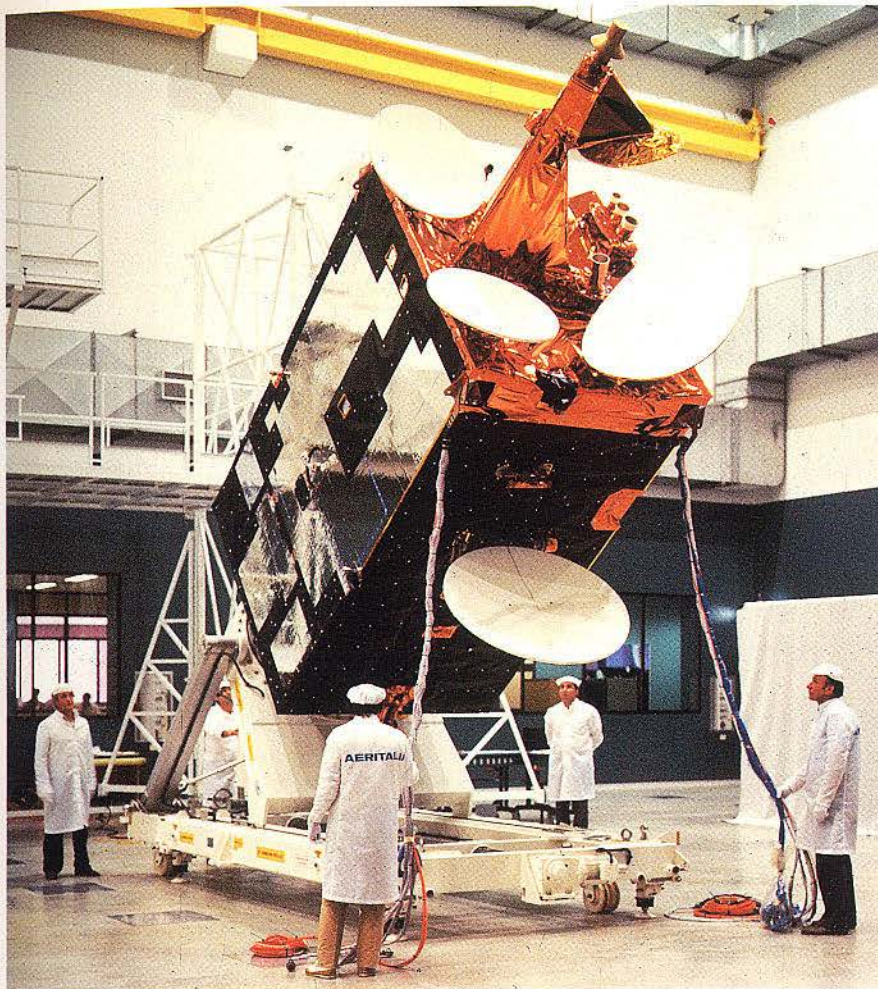
- closer observation of the solar system, with clear images, like those sent by the Voyager probe from Jupiter, Saturn and Uranus;
- study of the stars similar to the Sun and nearer to us, to find out whether there are planetary systems like ours;
- prove the existence of the "black holes";
- measurement of the travelling-out speed of galaxies and assessment of the age of the universe.

These are fascinating tasks, which will add enormously to man's knowledge and could lead to substantial changes in our previous conception of the universe.

Telecommunication satellites

They are the most numerous (more than 500 at present) and have given such a vigorous impulse to the transmission of all kinds of data anywhere in the world so as to give a determinant contribution to the transition from a post-industrial society to the information society in which we live now.

These satellites have forced out the expensive and limited



The "Olympus" satellite with its antennas folded in launching position.

transatlantic cables. They have made radio-wave transmissions obsolete, since radio-waves are too influenced by ionospheric variations, and potentiated microwaves, which before were employed only for short-distances, straight-line transmissions between repeaters that can see each other.

These satellites use a geostationary orbit, at 36,000 km: an altitude where the satellite rotates at the Earth's speed and consequently remains still on a determined spot of the Earth's surface and always within its sight.

The places in the geostationary orbit are limited and it has been necessary to regulate all introductions through very strict rules.

The services that can be provided are: telephone, telex, telegraph, telefax, data transmission, radio and television programmes, computer links, video conferences. These are services that may concern large areas but can also permit direct point-to-point and television connections, for instance in the case of small isolated communities.

The satellites' transmission capabilities have kept pace with the progress of the technology in that sector. "Telstar I", launched by the U.S. in 1962, could carry 600 telephone conversations or one TV channel. "Early Bird" (1965), the first of the Intelsat series, had 240 telephone channels, which have grown to 12,000 in Intelsat V and will reach the number of 33,000 – plus 4 television channels – in "Intelsat VI", which will be launched shortly.

Other important satellites were the 6 of the Ats family, also launched by the U.S. in the period 1966-1974, the 12 "Statsionar" of the Soviet Union (1978-1985), the 3 of the "Arabsat" (1985) and the 11 "Oscars" (US) for radio amateurs.

Italy has participated in this important activity with the "Sirio" satellite, launched from Cape Canaveral in 1977, for experiments on frequencies from 12 to 18 GHz. Our country is also very actively engaged, as partners of the European Space Agency (ESA), in the construction of "Olympus", the first European liquid-propellant satellite, with capabilities equal to two direct television channels, one of which will be exclusively employed by the Italian TV, which means that with an 80 cm dish-antenna we will be able to receive the TV programmes directly.

All that concerns satellite communication is regulated by the International Union of Telecommunications, in which 158 countries participate. But the real rulers in the commercial field are the international consortia, the most powerful of which is Intelsat (International Telecommunications Satellite Consortium), with a partnership of 110 countries; Italy is among them, with a 2.6% share. Since 1964, date of its establishment, the consortium has been acting in a monopolistic environment as the only "satellite global system".

Entelsat is the organization that takes care of Europe's interests. Created in Paris in 1977, it has been joined by 20 countries. Entelsat has sent into orbit 3 satellites called Ecs (European Communications Satellite). Its activity will have to cease by 1988, latest date accepted by Intelsat because, by that time, this organization will have the availability of satellites with capabilities sufficient also for Europe's internal services.

"Immarsat" is the international organization of satellite maritime telecommunications, established in London in 1979, with a membership of 43

countries. Its operative network is constituted by 7 satellites: 3 "Marecs" and 4 "Intelsat Vs", in a geostationary orbit over the Atlantic, the Pacific and the Indian Ocean. It provides telephone, telex, telefax and data transmission services to more than 3000 ships and offshore oil rigs.

The Soviet Union and the countries politically linked to it, since 1971 have been availing themselves of "Intersputnik", which uses the net of "Statsionar" satellites, 12 up to now, all of Soviet design and construction.

In 1976, in Riyadh, Saudi Arabia, the "Arabsat" organization was established to meet the needs of the 22 nations of the Arab League. It employs three French satellites which have the main task of providing direct point-to-point and television connections for small isolated communities, with antennas having the approximate diameter of 3 metres.

Scientific satellites

These satellites were launched for many different purposes: study of the form and dimensions of the Earth, movement of the great tectonic plates, mechanisms of earthquakes, density and temperature of the atmosphere, propagation of electromagnetic waves, relations between atmospheric phenomena and solar activities and observation of ultraviolet rays, X rays emitted by the Sun and cosmic rays.

Although the satellites sent into orbit are limited in number (about a hundred, the most important of which are the American "Vanguards" and "Explorers", and the Soviet "Sputniks"), the scientific results have turned out to be quite valuable.

These satellites have permitted the discovery of the crescent-shaped Van Allen belts at an altitude of more than 1000 km; they consist of particles charged with energy, therefore with intense radiation, which are held within the Earth's

external magnetic field. They have a very important function, because they stop the protons and ionized electrons of the solar wind, which would otherwise reach the Earth's surface with devastating effects for man.

It has been possible to establish that the Earth is not shaped in an exact spheric form, but it rather resembles a pear and the flattening at the poles is not symmetrical: compared with an ideal sphere, the North Pole stands on a protuberance of 18.9 m, while the South Pole is in a depression of 25.8 m.

We have been able to ascertain that geographic maps, even the most accurate, show mistakes of some kilometres.

"Lageos I", launched in May 1976, with the purpose of studying the movements of the tectonic plates, found out that the velocity of the displacements along the fault of Saint Andrea in California is half as much again the average, which means that the internal pressures are very strong and could cause earthquakes and volcanic eruptions. In 1987 Italy will build - and launch by, means of the Shuttle, "Lageos 2", to keep a close watch over the evolution of the numerous faults that intersect in the Mediterranean region.

Meteorologic satellites

With the help of weather satellites, meteorology is losing its aleatory character and becomes more and more an exact science. The combination of polar and geostationary satellites has permitted to make very reliable weather forecasts. The polar satellites, with orbits almost perpendicular to the equator's plane, make a complete tour around the Earth in about one hour and a half and can provide a complete image of the globe every twelve hours. The geostationary satellites constantly survey a circular area with a radius of 9,000 km, equal to one fourth of the Earth's surface.

The major meteorologic systems of an entire continent

are seen in a single image and continuously surveyed, so as to follow their development step by step. In this way we can obtain global information which, together with the information supplied by the land stations, enable us to know with a very good approximation the weather conditions of a given area.

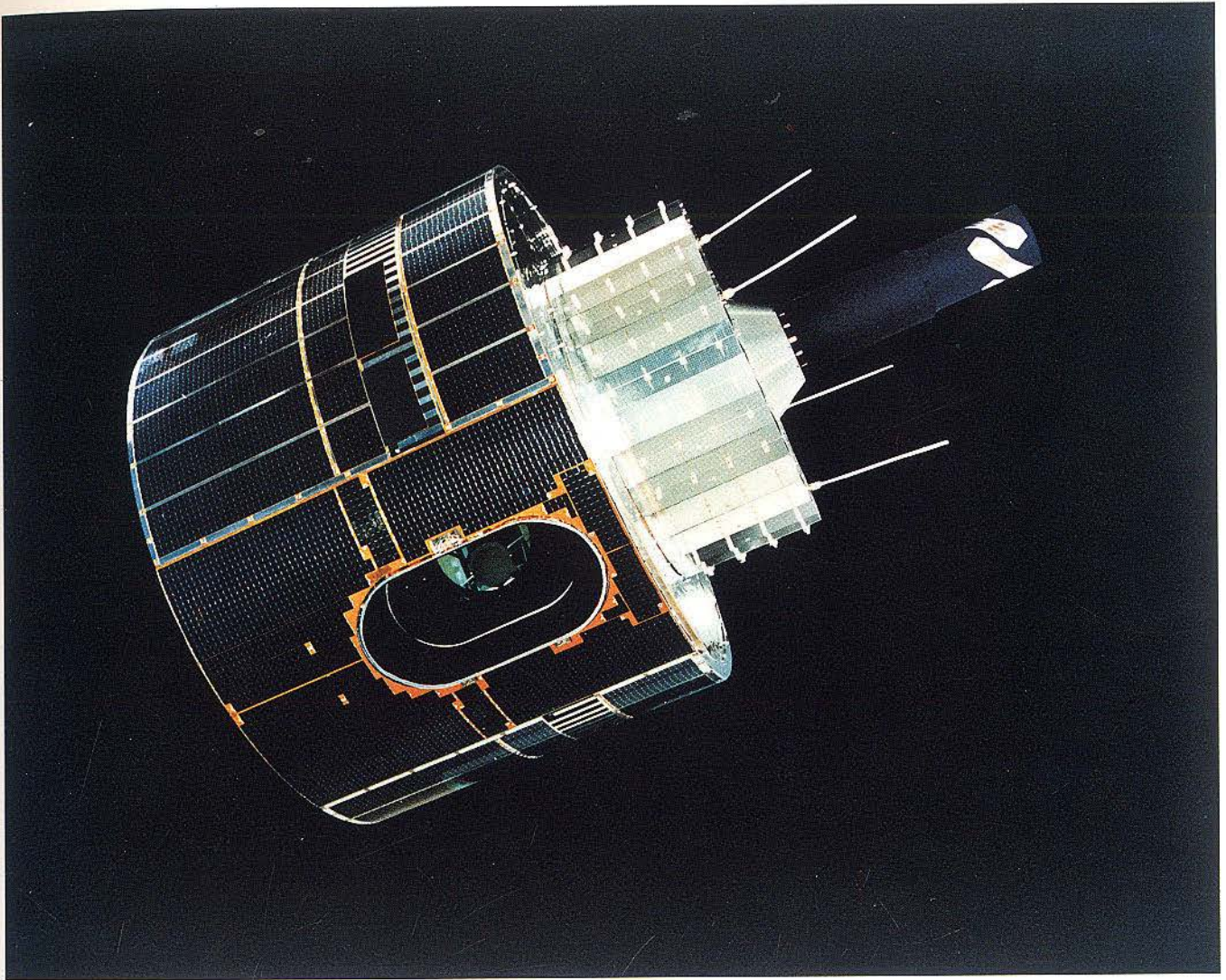
The common need to have accurate data has caused nations to overcome political barriers; the United States, the Soviet Union, Europe and Japan have joined in Garp (Global Atmosphere Research Programme), whose operative satellite network has started functioning in 1979.

The net is made up by the American "Tiros-Ns", the Soviet "Meteor 2s", the ESA "Meteosat 2" and by the Japanese "Gms 3", which are in a polar orbit, and the US "Geos" in a geostationary orbit, with working capabilities in the visible and infrared fields.

Immense are the benefits obtained as regards economy and security. By knowing the moment in which hurricanes start, and their development, it has been possible to cut down damages and casualties. Through the forecasts about snow melting we have been able to plan the control of floods and irrigation. The shifting ice fields of the Arctic and the Antarctic and the huge drifting icebergs are being constantly surveyed, thus making navigation more secure. Clouds of locusts have been detected in advance, thus helping to wipe out this terrible scourge from the poorest regions of the Earth.

Rescue satellites

These satellites are employed to improve, so as to make them automatic and reliable, the search, tracking and rescue operations hitherto carried out by the network of radio beacons, whose results were not always satisfactory. We have in fact improved the detection of a distress point from an approximation of 100÷200 km, permitted by the traditional land systems, to an approximation



The United States, the Soviet Union, Europe and Japan have joined in a Global Atmospheric Research Programme (GARP). The picture shows "Meteosat", which is part of GARP, with four data-relaying antennas, operating on S and VHF bands.

of 2÷5 km. And while the area investigated used to be limited only to the zones of air and maritime traffic, now it is extended to the entire globe. Lastly, the time for setting the rescue in motion is reduced to less than two hours.

The organization that governs this activity became operational in July 1985 and is called Sarsat-Cospas.

The nations that up to now have joined the organization are:

US, USSR, Canada, France, United Kingdom, Sweden, Norway, Bulgaria and Finland.

The operating network is formed by three satellites (soon there will be four) and ten ground stations.

The satellites are two Russian Cosmos and the American Sabat 2 in quasi-polar orbits.

The stations are located on the territory of the nations that have joined the programme, on strategic points, so as to cover the whole northern hemisphere and a large belt to the south of the equator. This is how the system works; the signal sent by the craft in distress is picked up by the satellite which, through the Doppler effect, determines its first-approximation position. The data are then relayed to the closest ground station, which

further reduces the area of indeterminacy and orders the intervention of the rescue means.

Although the system is just beginning to work, the results have been very positive: hundreds of human lives have been saved in incidents that involved airplanes, ships and even excursionists.

Navigation satellites

At present there are two systems for determining the position of a moving point. The Navy Navigation Satellite System, of rather low accuracy, employed for determining the position of ships, and Navstar Gps, which has a much better performance and is therefore used also for airplanes.

The first system utilizes "Transit" satellites in a polar orbit. A high number of them has been launched, also because there must be at least six Transits simultaneously in orbit at different levels, so that at least one is always in view, for broadcasting the position. On the average, the coordinates are determined every hour and inaccuracy is about 500 m.

The second system, Navstar Gps, is also called "a constellation of artificial stars", because in its final phase, foreseen by 1989, it will have simultaneously in orbit as many as 18 satellites. This number is necessary in order to continuously give the coordinates to the moving vehicle.

The system was created in 1975 by the U.S. Department of Defence and, besides latitude and longitude will provide, to any kind of stationary or moving user, data about velocity, time and altitude.

The approximations are; 18 m horizontal and 30 m vertical, 0.1 m/sec for velocity and 100 billionths of a second for time. This is an unprecedented accuracy, that will foreseeably be utilized also in all the activities which need starting points determined with maximum precision: cartography, geophysics, geology, etc.

The data are coded and therefore they can be received only by authorized users.

Earth resources satellites

These satellites have proved to be very useful. They are capable of carrying out a real research into the aspects of the natural environment, with remarkable economic benefits.

Nothing escapes their vigilant eye, both in the visible and near-infrared fields. They perform a very large number of tasks: control of urban and industrial settlements, cultivations, vegetation's health, wood fires, level of catchment basins and mountain snows, water and atmospheric pollution; exploration of mineral and oil deposits,

observation of marine and atmospheric phenomena in connection with climate and ground fractures linked to seismic movements; detection of the routes followed by fish shoals in relation to sea currents; updating of maps and determination of data for large-scale geographic charts.

These activities include a wide range of subjects, such as: use of the territory, agriculture and forestry, geology, hydrography, oceanography, cartography. Activities which have significant spin-offs regarding harvest forecast, flood and irrigation planning, programming of mining and drilling processes, ship routes along the coasts, exploitation of fish resources.

The most well-known satellites employed for these purposes are those of the Landsat family, the first of which was sent into a polar orbit by the U.S. in July 1972, and the last, Landsat 5, was launched in March 1984.

They have an operational life of about three years, and survey areas whose sides are 185 km long, with a repetitive cadence of 16 days.

The Seasat and Topex satellite have been given essentially oceanographic tasks. The first was launched in June 1978 and, although it worked only for 105 days instead of the 3 years foreseen, has produced a rich harvest of information about depth and geological conformation of large ocean areas, thus permitting to update many bathymetric charts.

The second will be launched in February 1989 with the ambitious task of making a global survey of the oceans: tides, currents, sea-surface temperatures, wind velocity, wave height, ice expanses, etc. It will travel in an orbit with a 65° inclination on the Equator plane and the repetitivity of observation will be 10 days.

As from the '90s also the European Space Agency will have availability of resource satellites.

In fact there are three satellites in the programme, Ers 1

2 and 3, tasked with surveying the oceans, coasts and dry land in scientific and commercial missions.

Also Italian firms will participate in their construction. Finally, France, together with Sweden and Belgium, is planning to launch three satellites of this type, respectively in 1986 (Spot-1), 1988 (Spot-2) and 1990 (Spot-3) for studying the use of the soil and environmental evolution, agricultural and forest resources, survey of mineral and oil resources, cartography.

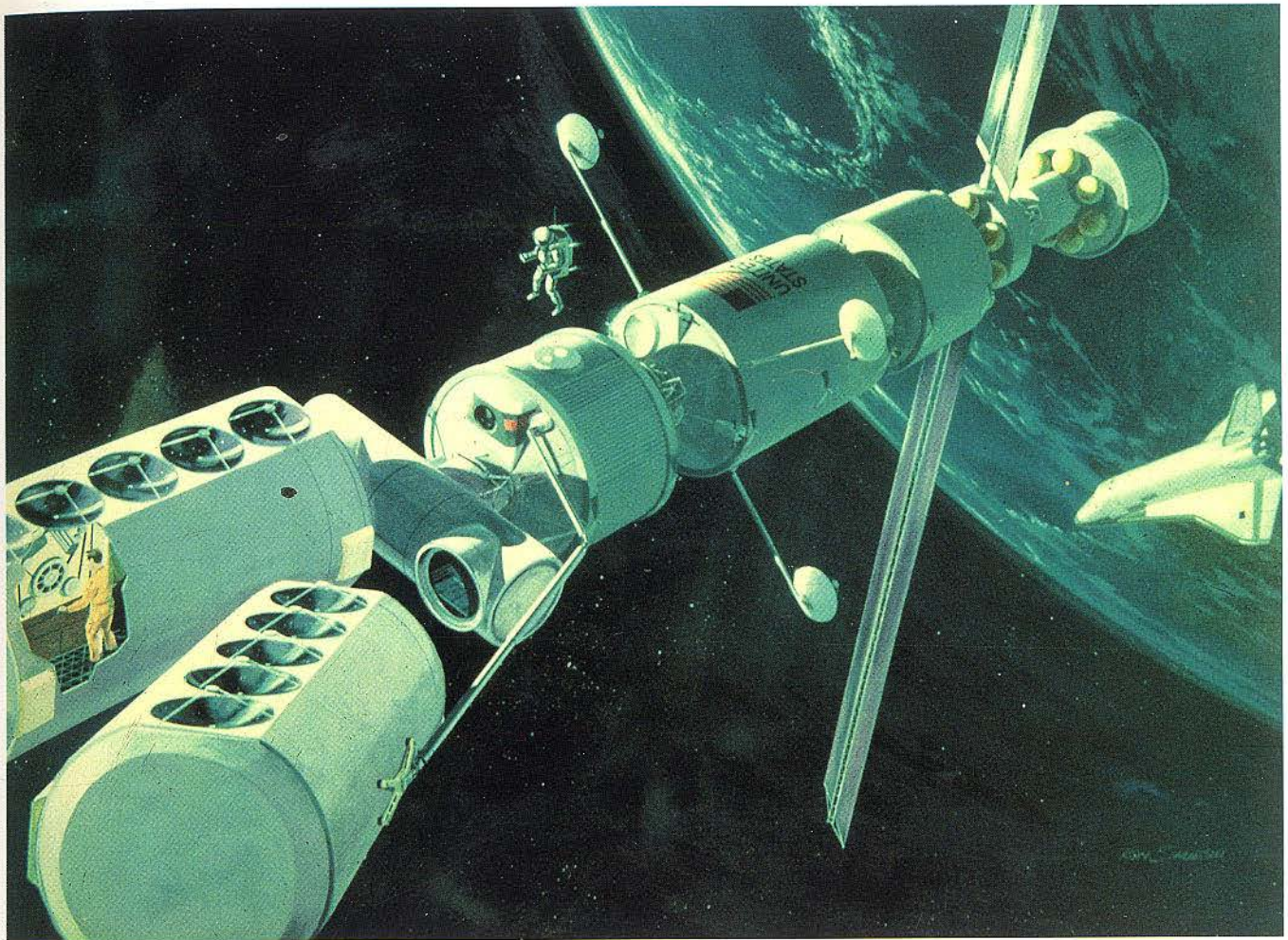
Military satellites

Even though the first satellites launched in space had eminently scientific aims, there is no doubt that the military component has had a preeminent role. Information on this sector has always been classified, but what has leaked out is enough to confirm the general opinion that what triggered the entire machinery was the use of space for military ends.

The participants in this race are the United States and the Soviet Union; what is at stake is the conquest of world supremacy.

There are various classes of military satellites reconnaissance, surveillance, communication interception, antimissile, antisatellite.

The reconnaissance satellites are equipped with very sophisticated devices which permit to survey with extreme accuracy every detail of the Earth's surface. Thanks to them, both superpowers know exactly the deployment of the respective Armed Forces and the number and location of the ballistic missiles' launching pads. They can moreover follow their evolution, deriving very important strategic deductions. One of their tasks is the detection of nuclear explosions, underground or otherwise. At present the United States uses satellites of the Big Bird and Key Hole class. The difference among them is that the former travel in very low orbits (160 km) and have a six-month operational life, while the



An example of manned space station. Until today, between manned and unmanned satellites, probes, space stations and scientific laboratories, over 3000 vehicles have been launched into space.

latter work in higher orbits and have a three-year life span. The Soviets use satellites that work only for a couple of months. Therefore they need continuous replacements and this explains why the Soviet launchings in one year vastly exceed those of the U.S. (in 1984: 97 against 22; in 1985: 96 against 17).

The surveillance satellites' task is to give warning in case of an enemy missile attack. They play therefore a fundamental role in the strategic defensive system. They carry very sensitive infrared sensors which detect the missile already at the launching stage, picking up the heat

emission produced by the propelling systems. This is why the satellites are kept in a geostationary orbit on Soviet territory, on the Indian Ocean and on the Pacific. The data gathered are immediately beamed down to ground centres for the ensuing decisions.

The U.S. uses Early Warning satellites, while the Soviets employ Ews.

The communication interception satellites are also within the framework of the surveillance activities. The devices they carry can intercept radio, radar and telemetric signals, including those sent by submerged submarines. The U.S. uses Rhyolite satellites in a geostationary orbit. The Soviet employ Cosmos satellites in low polar orbits.

From the adoption of the new U.S. strategy based on the "Space Shield", the antimissile satellites are playing an important role. The mentioned

strategy in fact calls for the activation of a huge defensive organization, whose strongpoints will be constituted by kinetic and directional energy weapons, deployed not only on the Earth but also on orbiting satellites, either in space or in a geostationary orbit above strategic points. For the moment we are only at the research stage, i.e. very far from the goal, but owing to the already existing technologies, the rapid advances made in these last years and the great determination shown by President Reagan in proceeding with the programme, it is easy to forecast that the initiative will be entirely successful.

We must therefore expect that by the year 2000 the space will be cruised by a wide range of satellites, either carrying various types of laser weapons (X rays, free-electrons, etc.) and kinetic energy weapons, such as high-velocity railways and

minimissiles, or utilized as carriers of large mirrors used to reflect, on the attacking missiles, laser or particle beams emitted by weapons located on prominent points of the Earth.

In this scenario the anti-satellite missiles acquire great importance, for they are tasked with the destruction of the space part of the defensive organization described above. The Soviets are the most advanced in this sector because already since 1968 they have had at their disposal the so-called "killer satellites". These are launched in a circular orbit, close to and aligned with the orbit of the objective. At a predetermined point a space motor gives them a further push to shift them in the orbit followed by the target, which is approached and then destroyed with kinetic or directional energy weapons.

The U.S. has not yet developed these technologies, and its research is aimed at killing satellites with infrared missiles (Asat) fired at high altitude by fighter interceptor planes. In September 1985 a test was conducted with an Eagle F 15 fighter and the missile, fired from an altitude of 21 km, hit and completely destroyed on impact an old Air Force satellite orbiting at an altitude of 540 km.

SPACE LABORATORIES AND STATIONS

Satellites have represented the first step towards the conquest of space and, with them, we have been able to overstep the atmospheric barrier, but man's ambitions do not certainly stop here.

Besides having the key which has admitted us to the so-called fourth environment (after land, sea and air), we must have the means that enable us to live in, at first, and then exploit, this ambient.

The Soviets have been particularly engaged in manned missions in space. A Russian, Yuri Gagarin, was the first man to fly around the Earth, the

first rudimentary space station launched into orbit (Salyut-1, in 1971) was Russian, and also Russian is the crew that holds the record of durability in space, with 236 days, 22 hours and 40 minutes (from February 8 to October 2, 1984).

Also the Americans have done their share. On July 20, 1969, they landed on the moon, but their enterprise, amazing as it was, must be considered an isolate event, because it had no follow-up. In 1973, with a Saturn rocket, the U.S. sent into orbit the first space laboratory, Skylab, a gigantic structure, 36 m long, weighing about 90 tons. Although it had an operational life of only nine months, Skylab practically opened the way to space industrialization, with the first experiments of metal fusion in microgravity.

But a decisive turning point has been the realization by NASA of the Space Shuttle system. As a matter of fact a system of this kind had been lacking for years: a system cheaper than the expendable one-shot launching rockets, a reusable carrier, capable of supporting any type of mission.

The Space Shuttle, capable of flying in the atmosphere like an enormous glider and of working in low orbits, has solved the problem. It is a transport of great operational flexibility.

In its large cargo bay, there is room for up to 30 tons of the most disparate payloads: satellites to be subsequently placed into the planned orbits; astronomic instruments for cosmic observation and cameras for taking pictures of areas on Earth; military apparatuses; complete scientific laboratories, like the Spacelab, built especially by ESA for experiments on board the Shuttle; "orbital platforms" which, placed into space by the Shuttle's robot arm, are scooped up, sometimes months later, by another shuttle and carried back to Earth once the experiments for which they had been put into orbit are concluded.

"Salyut 7", which has been in orbit since 1982, owing to its

duration in space can be already considered a semi-permanent station. For different lengths of time it has been linked with heavy Cosmos spaceships, which are to be considered real modules for future permanent stations, and with automatic transport spaceships called "Progress". In so doing the Soviets have set up a 50-ton space unit, which constitutes the first attempt to construct stations through the junction of different modules.

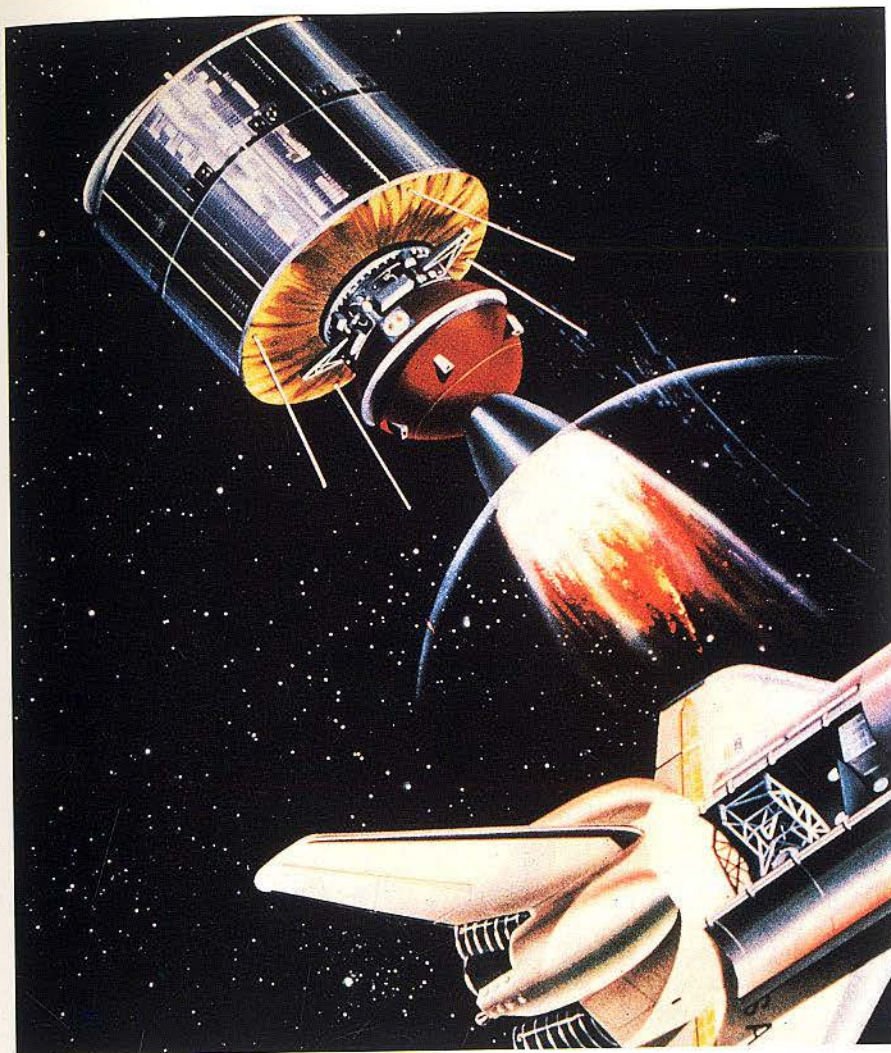
On February 20, 1986, the new Soviet space station, Mir, has been placed in orbit. It is a new-generation vehicle, much more advanced than the preceding Salyut. All operations are automatic, the on-board equipment is technologically in the vanguard, and great care has been given to the comfort of the crew: each man has its own cabin, with bed and sink. Its six docking hatches let us assume that Mir is the central nuclear nucleus of a larger permanent station, to be completed with the addition of more modules.

The advent of the Shuttle has given new impulse to the construction of new large space systems and quite certainly they will be achieved within a short time.

For the immediate future, two types of projects have been foreseen:

- one regarding manned space vehicles similar to the "orbital platforms" seen before;
- the other, concerning large space stations that will be assembled piece by piece, assisted, maintained, repaired and supplied in orbit by the Shuttle, and whose fundamental goal will be to enable man to live and work in space in a permanent way.

The first reusable European platform will be "Eureka" which will probably be launched in 1987. Lifted by the Shuttle into a low orbit (330 km), it will make a transfer manoeuvre with its own means and reach the envisaged operational orbit (490 km), where it will stay for



Launching of a satellite from the "Shuttle".

about six months, making scientific experiments. After that, it will be retrieved by the Shuttle, brought back to Earth and reemployed in a new mission, for a maximum of five. ESA will also build the Columbus space vehicle, starting from the Spacelab basic structure, improved through the addition of complementary modules, systems and equipment pertaining to the planned mission. The following three configurations are envisaged:

- manned scientific laboratory, partially assigned to a space station;
- manned vehicle-laboratory, that separates from a space station through its own propelling systems;
- same configuration as the preceding one, but with docking possibility for a shuttle, to

transfer the crew to and from a space station.

The European "minishuttle" Hermes, proposed and financed by the French government with the contribution of other ESA nations, including Italy, is still on the drawing board. It is a 10-ton reusable manned vehicle, functioning autonomously, which will be sent into orbit by the latest specimen of the Ariane launcher family by the end of the '90s.

Last, the most outstanding unit – for the Western world at least, because very little is known about future Soviet projects – the permanent American space station, which should be ready by 1992-1993. It will be built entirely with parts brought up by the Shuttle and assembled both with the robot arm and directly by the astro-

nauts, who will be perfectly self-sufficient in their spacesuits, as regards both survival and movements.

At first the unit will have a weight of 130 tons, a length of 118 m and be 88 m wide; it will be able to accommodate six to eight persons, but it can be enlarged according to the needs, in connection with a very interesting range of options.

THE INDUSTRIALIZATION OF SPACE

From what has been described above, there is no doubt that the preconditions for the industrialization and commercial exploitation of space have already been established.

The impulse to work in the new environment is given by the well-grounded hope to derive big economic benefits from it. In space there are in fact two conditions which cannot be found on the earth's surface; absence of the force of gravity and vacuum. These are conditions that could favour the beginning of industrial processes for production of new materials, alloys, pharmaceutical products, etc., impossible or very difficult to realize on Earth. Their processes would also be facilitated by the ample availability of the low-cost energy existing in space, due to the transformation of sunbeams into electricity.

According to the experts, the materials concerned would be: special alloys, semiconductors, improved magnets, catalysts, fibre optics, enzymes, polymers, solar batteries, etc., while the most effective production processes would be crystal formation, manufacture of materials without container, metal fusion, polymerization, electrophoresis for biological separations.

Moreover, the space industries of the year 2000 could take care of the processes that

require large amounts of energy, such as cutting, welding and melting metals with laser beams.

The energy produced in space could also be a precious reservoir for Earth's needs.

There is already a project named "Satellite Power System" which envisages the deployment in a geostationary orbit of about a hundred large satellites which should transform solar energy into electricity, convert and send it to Earth in the form of microwave beams.

Among the various techniques, the procedure that seems to give the best results is the formation and growth of crystals. As everybody knows, one of the essential parts – we could indeed say the heart – of every electronic device is, first of all, the chip or the microchip. These tiny components are made of gallium arsenide or very pure silicon, very difficult to obtain in traditional laboratories, because their manufacture is disturbed by the force of gravity and by impurities which can produce small transformations that cause fractures and structural faults lowering the efficacy qualities of the crystal. On the contrary, in space exist the conditions for forming bigger and almost perfect crystals, with electronic qualities higher than the products obtained on Earth.

A number of American companies which have made agreements with NASA to perform experiments in this sector have even quantified the production of these semiconductors in 40 kg by 1990, which will rise to 3000 kg by the end of the century.

Another technique that will be largely used is the employment of liquids without container. This is possible because liquids float in space, kept together by surface pressure. This characteristic facilitates all those chemical procedures which, owing to great sensitivity, could be damaged by impurities. This is true for catalysts, whose effectiveness in normal chemical plants is considerably reduced

by the contaminating agents in the containers. To hold still the liquids employed in reactions, magnetic fields could be employed.

Processing without containers also facilitates the production of glass with particular qualities, such as glass-fibres, which are more and more widely employed in the sector of telephone communications. Compared with the traditional copper wires they can transmit, with considerable lower distortion and weakening of the signal, a much higher number of communications. They are moreover very much lighter and need less signal amplification (every 40÷50 km instead of 1÷2 km). The Americans have planned to install an optical telephone cable 1200 km long.

Often the metal objects obtained through fusion show imperfections due to particles that move within the melted metal, owing to currents induced by the force of gravity. Besides, these currents can hinder the complete amalgamation of some substances, preventing the formation of alloys that could show qualities particularly useful in certain sectors.

In space, in a microgravity environment, these inconveniences would be automatically eliminated and one could obtain new alloys and composite materials which could be widely employed in the industrial field.

In this regard, one of the experiments to be carried out in the "Eureka" orbiting laboratory will concern the overlaying of ceramic materials with melted metals. This test is part of the researches concerning the production in orbit of superalloys of very high mechanic and thermic resistance, to be employed for engines and turbines.

Polymerization is the chemical procedure that makes possible to combine small molecules to form larger molecules, the so-called polymers. There are natural polymers that are at the foundation of numerous biological processes, such as "enzymes", and synthetic

polymers, such as polyethylene, vinyl polychloride and others, which are in the front ranks of the chemical industry, since they are the constituents of plastic materials, synthetic fibres, special resins, etc..

In a microgravity environment one could build much longer and larger molecule chains – which cannot be obtained on Earth because they would collapse under their own weight – to create new types of polymers, whose characteristics could pave the way for new interesting discoveries.

Finally, the process that has been widely experimented by both the Americans and the Soviets in their space vehicles: electrophoresis, i.e. the movement of suspended colloidal particles (micelles) through a fluid under the action of an electric field. This process finds application in the purification of biological colloidal compounds and in the separation of their constituents such as proteins, polysaccharides and nucleic acids, taking advantage of the different electrophoretic velocities of the various particles. Through this system even very high concentrations of the desired substances can be obtained.

On Earth this procedure often proves too difficult, slow and therefore unprofitable. In space, on the contrary, lacking gravity, the process is noticeably speeded up and could be employed to produce substances that could be widely used in medicine, such as "urokinase" for preventing embolisms, beta cells for curing diabetes, and others.

Besides industrial activities, and indeed before them, the space vehicles house the activities of pure research, which are the foundation of every scientific innovation. Always taking advantage of the two basic characteristics of the environment, microgravity and vacuum, the researchers can try to improve their knowledge of chemical and physical phenomena (i.e. behaviour of substances in the presence of



Launching of an "Ariane 3" missile. The European minishuttle "Hermes", designed and financed by the French Government with the contribution of other ESA nations - including Italy - will be placed in orbit by the end of the '90s by a more advanced model of the "Ariane" launcher family.

experiments, start the first processings and produce low-cost energy;

- **pre-industrialization phase**, which would comprise the first 25 years of the 21st century, and in which the first model components of the space factories should be built;

- **industrial phase**, starting in 2025, would witness the proliferation in space of a swarm of industrial units, built no more under government control but under the spur of private enterprise: i.e. the actual exploitation and commercialization of the new environment would take place;

- **final phase**, in which man will start the colonization of space, i.e. he will look for a place to live.

FUTURE PROSPECTS

Apparently mankind will soon exploit the nearest space, but the advantages would be much greater if the progress in technology permitted to exploit the enormous resources of the moon and the other planets of the solar system.

It has been ascertained, in fact, that on our satellites, on Mars and, even more, on the numerous and small asteroids that gravitate between Mars and Jupiter, there is abundance of minerals; they could become mankind's future mines. But, in order to achieve this, man must learn to live for long periods of time in the new environment and must be able to build real space ships for ferrying materials.

electric or magnetic fields, aggregation and amalgamation mechanisms of the various metal molecules in a determined alloy). Botanists, having ascertained that vegetables can be grown in space (as shown by the cereals and vegetables harvested by the Soviets on the "Salyut") have the possibility to study methods for growing more vigorous plants.

Biologists could concentrate their investigations on the growth and transformations of the human cell to find a cure for the most terrible man-threatening disease: cancer.

It is evidently a wide range of industrial and research

activities, which have roused the interest of many American, Japanese and European firms which, as we have mentioned before, have already made agreements with NASA for carrying out the experiments necessary to put the matter on a more concrete basis.

According to a plan worked out by the "National Space Commission" appointed by President Reagan in 1985, the industrialization and exploitation of space will develop through the following phases:

- **space platforms phase**, which should last until the year 2010, during which large stations would be sent into orbit to make

GLOSSARY

SUPERNOVA: a star which, for a short period (months), acquires an exceptional luminosity – billions of times that of the sun – owing to an explosion that affects its whole external shell.

The matter flung in space by the explosion forms a nebula around the remaining mass, which packs into a "neutron star" (pulsar) or a "black hole".

PULSAR (pulsating radio source).

It is a star of high angular velocity, characterized by a rapid periodic variation of the energy emitted, and therefore pulsating at intervals of 1 second or even less. A Pulsar is presumably what remains of a star larger than the sun after its explosion as a Supernova. It is probably a star almost at the end of its existence: its diameter is reduced to a few tens of kilometers, its density increases enormously until its matter is constituted only by neutrons. That is why it is also called "neutron star".

BLACK HOLE: a hypothetical celestial object which could be one of the possible final stages of the stars' evolution.

Generally the gravitational attraction and the thermal agitation of the gas particles that constitute the stars tend to balance. When the gases that feed the thermonuclear reactions become exhausted, the gravitational forces tend to prevail, owing to which a rapid contraction of the stellar matter occurs, followed by a considerable increase in density. The star collapses completely and reaches a particular proportion between density and mass; the force of gravity is such that nothing can escape its attraction, not even photons (i.e. light), thence the name of these objects.

QUASAR (quasi-stellar radio source).

Extragalactic objects, discovered only in 1961, that emit energy in an extremely variable way; they expand away from our galaxy at a very high velocity, equal to up to 90% that of light (300,000 Km/s). As their distance from us is up to 14 billion light-years, by studying them we could have a picture of the universe as it was 14 billion years ago, i.e. at its beginning, considering that from the Big Bang – the explosion from which presumably everything originated – until today, from 15 to 20 billion years should have elapsed.

sources. Third, the creation of a space colony between Earth and moon, utilizing materials coming in prevalence from the latter. Last, journeys towards the planets of the solar system and proliferation of ever larger and more earth-distanced space colonies. In this regard, it seems that the immense belt of asteroids should be particularly propitious to a human settlement, because of the abundant mineral resources, and due to the fact that the solar radiation is still sufficient to serve as a source of energy.

Infinite prospects open up before our eyes. But how much of what we described will come true? At present it is difficult to say, also because we are led to think that the urge to embark on enterprises that seem outside our reach could be mere curiosity, thirst for big economic profits: the same motives that have prompted the great navigators of the past to face inconceivable dangers to discover unknown lands. The motivations, instead, could prove much more serious as, for instance, the overcrowding or total pollution of the earth's surface: motivations that concern mankind's very survival. In this case the space enterprise would be compulsory.

We must realize that what has been done by man during the last decades is almost unbelievable. And if – as is already foreseeable – the technological and scientific progress continues its exponential growth, there is a chance that this infinitesimal particle of the universe that is called Earth will acquire again the importance that it had been given in ancient times, not as fulcrum and vital point of the whole cosmos, but as a primeval mother of a species which, with its intelligence, has been able to understand the fundamental laws that govern the universe and to stamp its mark on vast parts of it.

The first problem does not seem to pose great difficulties from the adaptation viewpoint: a Russian cosmonaut has lived in space, in two successive missions on "Salyut 6", for over a year without any inconvenience. And the environmental conditions of the rudimentary Russian stations are certainly not comparable with the ones that will be achieved on the future spaceships or, better still, in the space colonies, where everything will be done to obtain artificial gravity and life conditions as much as possible similar to those prevailing on Earth.

The studies already made envision the first space colony located at an almost equidistant point between the Earth and the moon, i.e. in a position of stable equilibrium. It will be constituted by two cylinders, about 1000 m long and 200 m in diameter, revolving in a manner so as to simulate the force of gravity of the Earth.

Through the ingenious use of mirrors and windows it will be possible to regulate the length of the day and reproduce the course of the seasons. Plants will grow up luxuriant, because humidity and insolation will be adapted to their requirements. Approximately 10,000 people could live in a space colony of this type.

But the material for its construction should be coming from the moon, where there are large reserves of silicon, iron, aluminium, titanium, magnesium, calcium and oxygen; obviously, the last element will have to be extracted from its compounds, such as ilmenite (iron and titanium oxide).

From the above it appears that mankind's expansion through space will occur in fixed stages.

First, a large permanent space station, to be used as stepping stone to our satellite. Then a moon base, for the exploitation of its huge re-

Gen. Gianfranco Farotti

THE DOCTRINE OF EMPLOYMENT OF THE «HAWK» MISSILE SYSTEM

CONSIDERATIONS ON POSSIBLE CHANGES IN THE LIGHT OF THE IMPROVEMENTS ALREADY MADE



During the last five years and within the coming five years the Hawk medium range missile system will have undergone so many modifications – and of such importance – that it will have a substantially different configuration compared to the system that went into service in the early '60s with the Armed Forces of several NATO countries, Italy included. In view of this, it is no fortuity that the 25th anniversary of the inter-

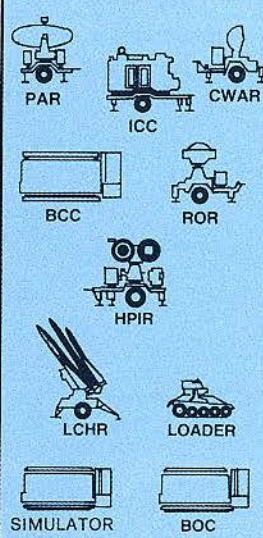
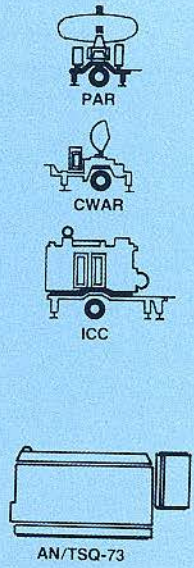
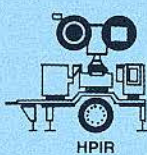
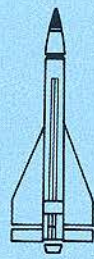
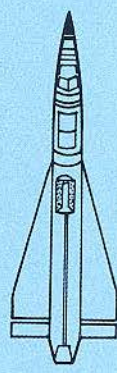
national organization that is at the head of the production and improvements of this system should have been celebrated in Paris, where it resides, with particular solemnity, considering that it symbolically represents Europe's commitment to common defence.

In Table 1 are summarized all the improvements made in Hawk, as well as those planned for the coming years. It can be said that what has not changed

– nor are there possibilities of change – is only the missile's fundamental philosophy. On the other hand, taking its validity for granted in the present and in the near future (1) the time has come to start the studies for its replacement, also considering that it takes from 10 to 15 years to go through

Launching of a Hawk missile.

EVOLUTION OF THE HAWK SYSTEM IN THE LAST TEN YEARS - IMPROVEMENT AND LOGISTIC PROGRAMMES

HELIP		PIP-1		PIP-2		M3		LOGISTIC PROGRAMMES	
1974	1978	1981	1984	1986	1991	1987	1992	1985	1991
									
HAWK EUROPEAN LIMITED IMPROVEMENT PROGRAMME (HELIP) - Automation of the battery's tactical functions through the introduction of an Information Control Centre (ICC). - Replacement of missile and elimination of test devices. - General overhaul of sets.		PRODUCT IMPROVEMENT PROGRAMME 1st PHASE - Introduction of AN/TSQ-73 Command and Control system at Bn. C.P. level. - Improvement of performance of detection radars (PAR and CWAR). - Introduction of a new system for processing and transmitting digitized data.		PRODUCT IMPROVEMENT PROGRAMME 2nd PHASE - Improvement of tracking capabilities in severe ECM environment. - Anti-radiation protection of missiles (ARM). - Improvement of reliability and maintenance of tracking radar (HPIR).		MISSILE IMPROVEMENT PROGRAMME - Adjustment of missile guide system to most modern ECM. - Restoration of reliability of electronic components.		MAINTENANCE PROGRAMMES - Replacement of explosive components (rocket engine, safety and arming devices, etc.). - Overhaul of some minor components of guidance system. - General overhaul of all sets.	

all the stages necessary to obtain a new complex weapon system.

However, the Hawk system is at present in service, and assuredly it will continue to be employed until the mid-nineties; therefore we must make the best of it and take advantage of its capabilities, which are much greater than is commonly believed outside the limited circles of specialists, who also are sometimes overburdened by contingent problems and therefore diverted from planning.

There are at least two possibilities of employing the Hawk system in a manner more suited to the specific and priority

needs of the Service.

The first derives from the high increase in effectiveness obtained through the improvements already effected and from those still to be carried out, and consists in the ability to predispose modifications – even considerable ones – in the present deployment of the units, in order to ensure the immediate and close defence of the elementary major field units and not only a generic areal protection of the predictable Combat Zones (this should not be a primary task of the Army's only medium antiaircraft system, but rather it should be done by the interceptors and surface-air

missiles of air defence). The second possibility – which has undergone hypothetical verifications also during the evaluations and exercises of the last years but has been excluded up to now from the concrete operational options – is that of dividing the Hawk battery into two smaller tactical units – one of which is called "Assault Fire Unit" (IAFU) – independent from each other and possessing tactical and logistic autonomy according to the employment's requirements, making use of the available "Assault Fire Unit Command Posts" (IPCP). To each of the two "split" batteries two different operational tasks

could be assigned, albeit for limited periods of time.

By adopting this solution one could still meet the global effectiveness requirements of NATO's air defence, fulfilling at the same time the needs of direct support of the Major Units, both in the Combat Zone and – if that be the case – outside it. And this "outside it" must be underlined, keeping in mind the prominence assumed by the Central and Eastern Mediterranean theatre during the last months (2).

An employment of Hawk more "in the field" and "committed" than has been until now is justified by the following technical aspects, besides the cost, relatively high, of the improvements and modifications:

- **mobility.** The Hawk is second to no wheeled weapon system, missile or conventional, including the light ones, as regards tactical mobility. It is indeed superior to some others in relation to strategic mobility, considering that its apparatus are all rather light, take up little space, and can be transported by helicopter. No wonder that in the U.S. is employed by the Marine Corps and by the Rapid Intervention Force;

- **supportability.** The system avails itself of its own exclusive organization for maintenance and repairs, modernly structured and suited to its operational and combat life (Bn. "RRR" units – general support units – etc.);

- **international technical and logistic support.** A highly positive element, not to be overlooked, is that all the aspects that in some ways are related to the Hawk system, the improvements, modifications, configuration control, updating of the technical manuals, etc., are monitored by the mentioned international organization, NHPLO, to which all NATO countries employing the system refer.

The same is done for the acquisition and delivery of spare parts and for the more difficult repairs, which are taken care of by NAMS (NATO Maintenance

and Supply Agency) with automated procedures and computerized management;

- **availability of specialized trained personnel,** of established professional experience.

To these typically technical considerations, another one, of an operational nature, must be added: a few months ago the introduction was completed of the "AN/TSQ-73" command and control system and of an integrated radio-relay transmission system at the tactical Command Posts of the anti-aircraft missile battalions.

As the "TSQ-73" system is by now a concrete reality, we must get ready, also in our mind, to exploit its high capabilities to the advantage of the entire organization of the anti-aircraft defence of the land units, and not only the missile units. Although it seems evident that the autonomous employment of parts of Hawk units for the army's specific needs could be made possible precisely by the remarkable operational autonomy allowed by "AN/TSQ-73", i.e. by an exceptionally efficient means for gathering, processing and transmitting information and orders, one must absolutely not overlook the possibility of using those data through other weapon systems linked with our system through elemental modules of communication, tracking and control.

Finally, the capability of "AN/TSQ-73" must be kept in mind also in the light of an organization of the forces not necessarily connected with the peace establishment of the Hawk units.

The destination of more or less large parts of the units to the direct support of the Major Units would not be completely... painless, even though the game would certainly be worth the candle: in fact the battalion and battery establishment should be reconsidered and the allotment of means, especially transport and signal equipment should be increased, with the purpose of giving the Assault Fire Units the

necessary tactical and logistic autonomy.

At this point an obvious question arises: why change the units' organization and modify their tasks and standards of employment which have been tested during twenty years of intense activity?

There are numerous answers of different nature, and all positive ones.

First of all, because owing to its characteristics, the Hawk system, as it was said in connection with its mobility, can be profitably employed in direct support of the field elementary major units, which for a few years are not going to have at their disposal any other anti-aircraft weapon system suitable for this specific task.

Second, because it seems very risky to predict that the Hawk units will participate in the air-land battle from the same operation sites where they are deployed in peacetime or from the alternative positions pre-disposed not far from those sites. Taking for granted that a possible conflict will start with a surprise attack of fighter bombers, massively employed to annihilate the air defence (Air Defence Suppression), there would be the risk of seeing the anti-aircraft missile units destroyed in one strike, before they could have any significant part in the battle.

Moreover, there is no doubt that with the present devices for electronic detection (including the numerous spy-satellites turning above our heads) the deployment of the Hawk units has already been exactly identified by our potential enemy a long time ago, and he has only to decide with what weapon systems he can strike: air-surface and surface-surface missiles, fighter-bombers, or both. And in this regard, it is better not to mention certain a-little-too-accurate maps published by organizations driven by a love for peace so appassionate that it borders on autolesionism!

This does not mean, of course, that the present



organization of the operational sites must be abolished. They constitute – as those who have had the privilege to command anti-aircraft missile units well know – a factor of exceptional technical and, what is more, spiritual cohesion, and maintain, also in peacetime, a concrete level of security in the defended area but it is out of the question that the sites themselves would become operationally useless at the very instant in which an emergency occurred.

Moreover one must not forget that the Hawk's deployment was planned in the early '60s when, for lack of specific experience, it was simply decided to repeat that of the pre-existent "Nike", even if this is designed to meet different needs and has practically no mobility.

Another answer to the question: "why change the Hawk's employment?" is... a question: what is the scenario of a possible conflict between

NATO and the Warsaw Pact? "The first phase of the air-land battle – according to publication FM-44/15 of the U.S. Army – will consist of high-risk operations aimed at obtaining air superiority and neutralizing the theatre nuclear forces. To obtain this result the Soviets will engage all their available forces: strategic, naval and tactical air force as well as strategic missile forces. Their air force, in particular, will endeavour to open passages and corridors through our airspace by suppressing the forward surface-air and anti-aircraft systems. Follow-on aircraft waves will use these corridors to attack the air bases, the command and control Centres, the main logistic Centres and the deployment of the theatre nuclear missiles.

Were these initial air operations to succeed, the West's power of reaction would be considerably reduced and

The Hawk battery, equipped with two radars, one for medium and low altitudes and the other for low and very low altitudes, can attack two different targets at the same time.

the ability to support the action of the land forces greatly undermined.

On the contrary, the success of our air and anti-aircraft defence in the first phase of the battle would decisively influence the developments of the successive phase, and especially:

- the size of the enemy air strikes against our land forces;
- the extent of the offensive air support that we shall be able to ensure to these forces;
- the Major Units' ability to manoeuvre despite the enemy air actions;
- the survival of the logistic support organization.

After the first attack waves aimed at achieving air superiority,

the enemy will give priority to the offensive air support to his manoeuvring land forces. The second phase of the air-battle, therefore, will consist in an attack on the facing land forces and their supports, with the final goal of attaining a far reaching strategic success..."

Until recently it seemed improbable that the NATO forces could counter a similar plan without making recourse to nuclear weapons, at least in the tactical field. Today, instead, new elaborations of the doctrine of employment of the NATO land and air forces enable us to envisage a solution of the problem through an in-depth intervention on the enemy organization, literally cutting off the first from the second echelons through a wide employment of technologically very advanced weapon system.

The succession of events, *seen from our side*, would then be as follows:

- the land forces in contact, powerfully supported by the air forces, conduct, with maximum resolution, an arrest battle, aimed at crushing the attack in the bud or, at least, at preventing the rapid attainment of important successes that could compromise the final outcome;
- specific protective measures prevent vertical outflanking and penetrations from the rear, in which the Soviet are experts;
- aircraft, missiles and variously sophisticated artilleries carry out a violent in-depth action (coordinated by a possibly unified system of command and control) whose main purpose

is to cut off supplies to the attack and prevent its reiteration;

- very violent counterrattacks destroy the forces that have penetrated.

All things considered, it is not really important that these actions and reactions, taken as a whole, should take a... new name, for example, FOFA ("Follow-on Forces Attack") or be retraced to an updated version of far interdiction, integrated with 21st Century means for target acquisition and weapon systems, provided that everything functions as is foreseen and intended to.

In this sufficiently defined scenario, from which there seems to emerge especially the need to possess a large number of surface-air and anti-aircraft weapon systems, differentiated as regards performance and integrated in action, what would be the task entrusted to the Hawk?

The medium missile system of the army should be secured from the action of the "Air Defence Suppression", which, as we have seen, will characterize the first phase of the air-land battle, and be employed in the immediately successive phase in a twofold task:

- contrast and prevent the enemy from attaining and/or consolidating air superiority;
- ensure direct protection of the Major Units engaged in the arrest battle from all types of air offence.

In order to carry out these tasks, no viable alternatives seem to exist to what we have already suggested: predispose the "dissolution" of the peace

deployment and implement it on an emergency; ensure, as far as possible, to complement the action of the air-defence weapon systems, the overall protection of the battle area from pre-designated positions, not prepared, totally "foreign" to the operational sites; organize as many Hawk batteries as possible into minor tactical sub-units, taking advantage of IPCPs; assign a substantial number of these units to the direct support of the first-echelon Major Units. This latter task, if we had availability of an anti-aircraft defensive organization, well balanced and based on weapon systems with differentiated performances, would rest with the light conventional and missile systems, but, unfortunately, we will not have those for some years. Meanwhile this task can only be entrusted to the Hawks.

Summing it up, in the course of events that could be determinant for our very survival, the Hawk missile system, improved in many ways, according to the current programmes or those already approved, for a decade or so is still going to have a decisive role in the Army's anti-aircraft defence. Why deprive this system of a responsibility which it is perfectly capable to assume?

Gen. Salvatore Armando Bellassai

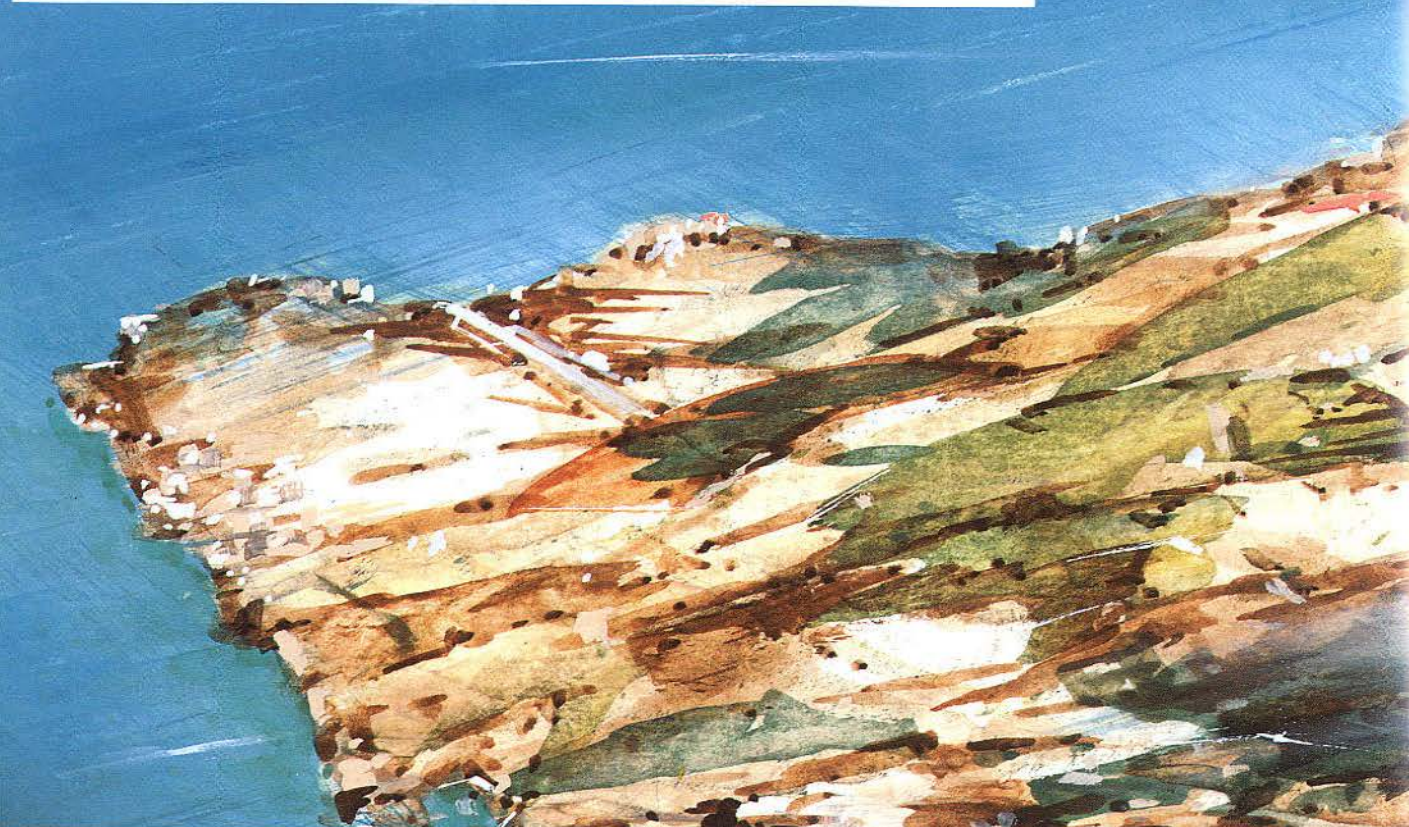
NOTES

(1) The Hawk has been defined by SHAPE "cornerstone of NATO's air defence".

(2) See S. Bellassai: "Air and anti-aircraft defence - Problems of the early '80s". Rivista Militare It. Edition, no. 2/79.

THE DOCTRINE OF EMPLOYMENT OF THE «HAWK» MISSILE SYSTEM

THE DEFENCE OF AN ISLAND



Crete, Tuesday, May 20, 1941, a sunny windless day: at dawn, like every morning of the past week, German airplanes bomb the airports of Maleme, Rhethymnon, Iraklion and the surroundings of Canea. After the second attack, fiercer than the preceding ones, the large silver forms of gliders appear in the sky and silently, in marked contrast with the deafening uproar of the bombing, plane down to the west of Maleme airport and behind Canea. Immediately afterwards, high in the sky, the slow "JU.52s" appear, from which long strings of paratroopers slip down.

Thus starts one of the most astounding and daring feats, and undoubtedly the most extraordinary airborne operation

of the entire war; the invasion of Crete, conducted exclusively from the sky.

The British had known well in advance and in detail the German plans for the operation; they were numerically superior and had prepared themselves with great care. Despite this, in less than two weeks they suffered a defeat which is an everlasting warning not to underestimate the danger of surprise strikes of this kind.

The battle, owing to its peculiarity, has had a wide echo in reports and literature; nevertheless, little importance has been given to the defensive combat carried out by the British forces. On the contrary, we have made them the object of our attention, because, as regards

some aspects of situation and scenario, they have many features in common with certain operational problems that concern us, and the lessons learned then can still be a reference for planning the defence of any island.

This is a particularly topical subject, owing to the interest attached to the minor islands, which indicates the need to update the procedures of employment and critically verify the training modalities as well as the organic structure of the forces assigned to their defence.

Within this conceptual outline we shall make a brief mention of the opposing operational plans, in order to evaluate to what extent the lesson of Crete could be useful, and to

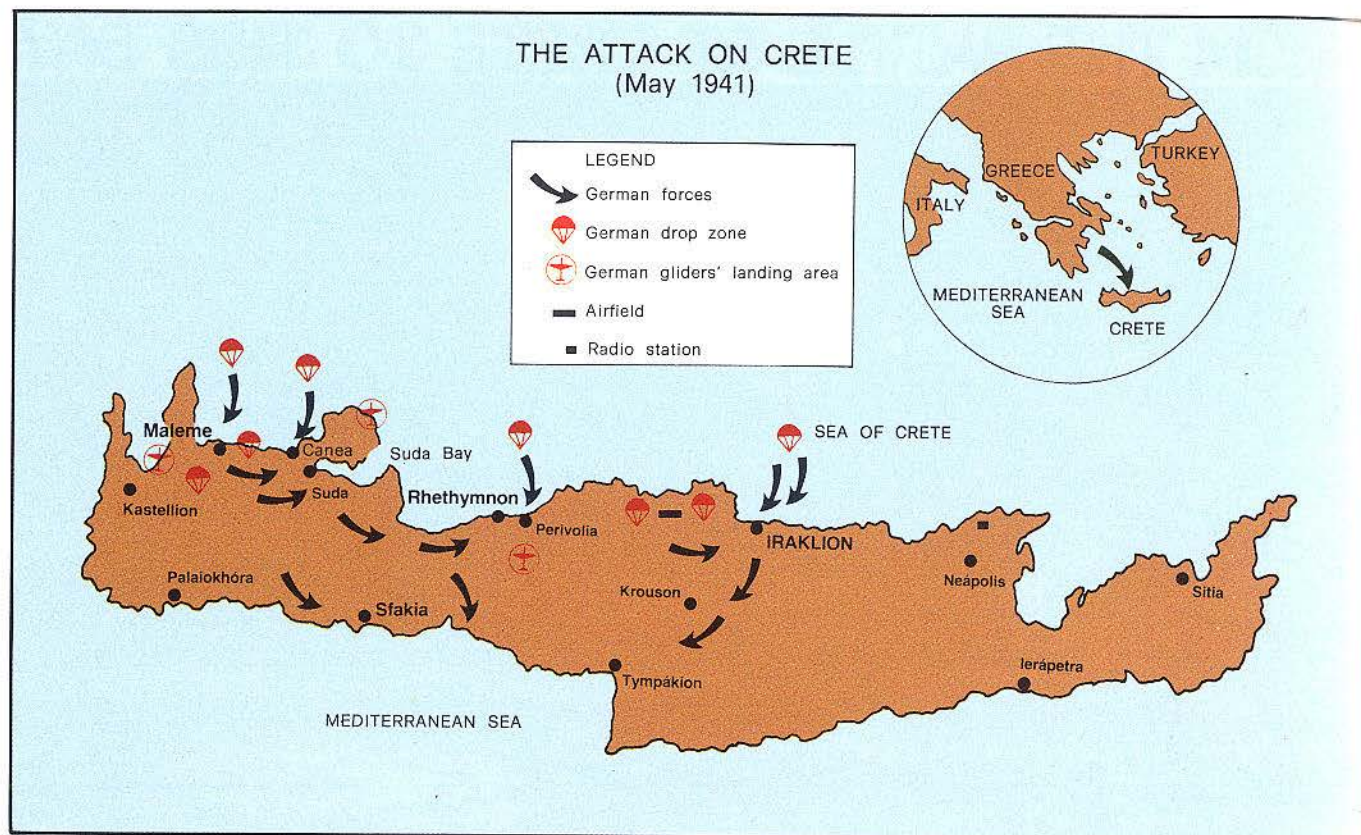
THORE

FROM THE BATTLE OF CRETE TO THIS DAY

An aerial photograph showing a coastal region. In the foreground, there is a large, flat, light-colored area, possibly a salt flat or a dry lake bed, with a grid-like pattern of lines. To the right, the land meets the sea, with a rugged, hilly coastline. The hills are covered in green vegetation and have some buildings or structures on top. The sky is a clear, deep blue.

better
illustrate the
criteria followed
and the experiences
acquired on that
occasion.

Afterwards, in the
light of the scenario
considered and referring
to the same criteria, we
shall outline some possible
procedures for the land
battle and draw operational,
training and organizational
indications, considering that
the defence of small islands
– as ours are – must be based
on, and carried out with, special
procedures which cannot be
improvised.



CRETE 1941

The operations

The island's topography conditioned the British defensive organization and influenced the conduct of the action in a determinant way; as a consequence, it influenced its outcome.

Crete was unapproachable from all sides but the north, where there were the four zones most vulnerable to air-landing operations: the surroundings of Canea and the airports of Maleme, Rhethymnon and Iraklion. Mostly barren, only in these areas was the island covered by vineyards, olive groves and almond trees, good concealments for the defenders. Deep valleys, cut by the waters, flowing north, compartmentalized the terrain and prevented crosswise movements, making them dependent on the only existing road.

This situation induced the British to divide their forces into four operationally independent defensive sectors, free from the bonds of any unitary manoeuvre

plan; as a consequence of this, later on they were easily separated from each other.

As a matter of fact the defenders had known the German plans for a long time and had prepared themselves well, organizing a defence around the areas suitable for airborne operations. The accurate determination of the heavy weapons' firing data on the potential objectives, the rational exploitation of the terrain and the exemplary camouflage of all works, preventing their detection, favoured the initial successes of the defence and contributed in causing very serious losses to the Germans at the moment of their landing.

Nevertheless, despite their excellent preparation and the good number of available men, the British suffered from a desperate shortage of equipment: antiaircraft weapons were insufficient, vehicles were scarce, tanks almost totally absent, the communications network, especially at short range, was inadequate. Even more serious were the differences in training

The Germans started the invasion of Crete on May 20, 1941, immediately after dawn, with paratroop drops. By May 31 they had occupied the whole island.

level between the British troops and the German paratroopers and the absolute absence of air cover which, together with the units' scarce ability to operate at night, in the end paralyzed every movement of the defence.

Against this plan, that of the invasion envisaged the conquest of the island following the occupation of the four mentioned areas and hinged on the occupation of the three airports. In this way, should difficulties arise in the occupation of one of these, it would have been possible to gravitate towards one of the already acquired ones and, meanwhile, the enemy would have been prevented, at the very start, from achieving exchange of forces between the various sectors. The operation was to be carried out by 3000 paratroopers in two waves, the first on Maleme and

Canea and the second on Rhethymnon and Iraklion.

What actually happened is well known.

The violent reaction of the defence, which had escaped observation and preparation, prevented the first wave from reaching the drop zones and caused heavy losses, especially in the Maleme sector. The attack against the heights dominating Suda and Canea met a similar failure. The second wave arrived piecemeal on the areas of employment and, as before, the British, on perfectly concealed positions, got the upper hand.

In the evening of May 20, the defenders appeared to be substantially stronger in the four areas where the paratroopers had been employed; nevertheless they restricted themselves to controlling the situation instead of counter-attacking with decision, thus allowing the Germans to strengthen their positions. Indeed, in the Maleme sector, the units charged with the defence of the airport withdrew from intrinsically strong positions, leaving a gap in the defensive system; the British command was not informed, due to shortcomings in communications. And it was precisely on this airfield that, the next day, May 21, the German airplanes started landing the reinforcements. For the defenders, that was the beginning of defeat.

The lessons

The failed timely employment of reserves for resolute reactions, the deficiencies in the tactical control of the situation, the inadequacies of means and training were the factors that jeopardized the conduct of the defence; on the other hand there were undoubtedly other factors that created serious problems to the attacker, such as the rational positioning of the stable structures, the camouflage of the works and the deception plan, the methodical organization of the surface and antiaircraft fire.

In substance it can be said that the British defeat was due to the inability to adapt an effective static defensive setup to the dynamics of an adversary with limited strength but capable of exerting his effort when and where necessary.

From the study of these facts, the British General Staff issued, already at that time, a directive with the relevant instructions for anti-airlanding operations that will be very summarily illustrated here.

The first consideration refers to the criteria of employment to be adopted in planning a defence. Granted that the threat is undetermined and that it is impossible "to be strong on all sides", it is convenient to assign not too large a share of one's own forces to static tasks, giving priority to the constitution of strong mobile reserves. In this way it will be possible to adjust the apparatus to the situation and, above all, the organization of the defence will take on an essentially offensive configuration, indispensable for destroying the enemy upon his landing, before he can consolidate his position. The essential precondition for ensuring the effectiveness of such an organization is the availability of manifold networks, highly reliable down to the lower levels, permitting a constant monitoring of the situation.

The part destined to static and fire support tasks must be deployed outside the areas suitable for landings of forces from the air, in order to shelter it from the preparation fire and to reduce the possibility for the enemy to land behind the defensive line; the vulnerable areas, therefore, will be controlled with distant fire. The fortified works and manned defensive installations must be protected from enemy observation and complemented with a decoy plan.

A further consideration concerns the training of the units entrusted with the task of defending an island. Their basic training must put them in the technical and psychological

condition to stand up to highly specialized assault troops; moreover it must give priority to the aspects of night combat, for it will be precisely at nighttime that the landed troops will try to strengthen the positions conquered, but they will probably be in no condition to the supported by vertical fire.

Last, a mention of the structure of the units to be employed. Their strength must be expressed not so much by the number of men, but by equipment and weapon systems capable of providing a decisive fire superiority at the occurrence of the impact with the enemy.

THE DEFENCE OF AN ISLAND TODAY

The scenario

The experience made by the British Army in Crete would only be an interesting subject of military history, were the considerations just made not applicable to the present, obviously adjusting them to the situation parameters of the concrete cases of employment.

In order to refer to an actual problem we shall consider our minor islands, which, owing to their size, are vulnerable to surprise operations carried out by relatively small forces, presumably carried by shipborne helicopters.

The overall morphology of our islands is very similar to the structure of Crete as regards form, vegetation, localized availability of areas vulnerable to airborne operations, scarcity and reduced capacity of roads, generalized inaccessibility from the sea. Conversely, the limited dimensions offer no space for reiterating an in-depth defence; it becomes of vital importance that there be a violent and resolute reaction at the moment of landing, before the attackers can strengthen their hold.

In opposition to the analogies of the natural environment there is a marked difference as regards the operational capabilities of the forces that would be employed now in



comparison to those employed in 1941, due to the technological progress made by equipment and armaments. The threat finds in the helicopter a flexible machine which, besides having determined the decline of gliders, integrates and can replace air-drops, increases the possibilities and security of night landings and augments, with its intrinsic landing ability, the undeterminacy of the areas subject to airborne operations. At the same time the availability of light but highly effective weapon systems increases the operational capability of the landing units (suffice it to think of the fire support that can be achieved with antitank weapons) thanks to which limited-size units, carried by few helicopters, can accomplish tasks more difficult than in the past. Moreover, the support of aircraft fire is always more powerful and can be delivered in any weather: in particular, the attack helicopters can ensure a timely, precise and close support, and are actual fire bases which, owing to their

armour and to the delivery distance of their weapons, are almost invulnerable.

The defence, in its turn, can avail itself of electronic tracking and surveillance systems which reduce the possibility of surprise attacks, although considering electronic warfare as immanent, and at the same time enable its forces to carry out a preventive intercepting intervention against the incoming formations. Still remaining in the field of electronics, the constant improvements of the communication sets and systems increase the possibilities to control the situation, provides early warning and facilitates the coordination of forces and fire.

The progress made in armaments favours not only the threat, as we have seen, but also the defence, mainly because the weapons' power is now independent from their weight and bulk (and consequently independent from the transport vehicles); this translates into easy deployment, movement and concealment, essential for

Above.

The threat finds in the helicopter a flexible machine, which integrates – and can replace – air-drops, improves the possibilities and security of night landings and makes it more difficult to determine the areas sensitive to airborne operations.

Right.

Attack helicopters can provide a timely, precise and close support; they are real fire bases, almost invulnerable to the light automatic weapons, thanks to their protection and the distance of release of their armament.

whomever must unfailingly withstand the enemy's air superiority.

In summary, comparing the parameters of the battle of Crete with those concerning situations with cases of employment of our interest, it emerges that:

- the natural environment is similar, although with different spaces;
- the employable equipment and weapons affect the operational capabilities of the opposing



parties in a similar way, determining a virtual balance, as compared with the past;

- the possibility of electronic detection can be compared to the British knowledge of the German plans, in order to prevent surprise with at least reasonable advance warning.

Consequently the considerations and criteria defined at that time are still valid and can still be employed.

Criteria of employment

In applying the criteria of employment seen before to the operational instance that concerns us, we must essentially keep in mind the following parameters of the scenario: lack of space for conducting an in-depth defence, increased vertical and surface firepower of the landing forces and marked flexibility of the landing means.

The result is an enhanced standard of reaction, which must be achieved through concentrations of forces or

fire, whose value is proportional to the timeliness of intervention. If one considers the scenario's limitation, the difficulty of movement for the units, due to scarce practicable roads and the realistically predictable enemy control of the sky, these concentrations are more easily and timely achieved with fire, through the manoeuvre of trajectories, than with the employment of forces. According to this frame of reference, the weapons that appear more suitable to the environment, owing to their easy camouflage, swift deployment and range, are the mortars. As a rule, the criteria of deployment and fire control will have to ensure to every vulnerable area a simultaneous cover from different deployments, and foresee fire control provided by the Observation and Alarm Posts scattered on the island, in addition to that provided by the deployed units and possibly by the reserve units, once they have entered combat. For this system to work, one should first solve a

set of problems, such as, for example, the availability of a sufficient number of trained fire observers and the integration of the alarm radio network with the fire net.

The perfect time for intervention is while the enemy formations are landing; maximum results can be obtained by firing against the slow-flying or hovering craft with any type of weapon, striking at them with mortar fire, keeping the available surface-air missiles for interventions against attack helicopters and combat planes. If necessary, even anti-tank missiles could be employed against the landing transport helicopters.

In short, the higher flexibility of the threat must be countered with a more flexible reaction, in order to inflict as many losses as possible at the time of the landing, making use of every means – even unorthodox ones – to concentrate the maximum firepower on the critical areas.

As regards the employment of the forces, the picture outlined



supports the method of assigning a very small share to the protection of the positions that control the most sensitive areas. For the stationary units, the modes and procedures of employment already considered are to be used. It might be added that, for controlling the vulnerable areas, one must take into consideration the convenience of deploying also active obstacles to check the bold behaviour of the enemy assault troops (considering the quality of the threat, an antipersonnel function is sufficient) and to favour the action of the stationary elements or the intervention of the reserves.

From this point of view, the criteria of deployment change according to the role that each area plays in the defence: if it is an area having no operational function, the obstacle can be deployed inside the area itself; contrariwise, if the area has a function in the defensive picture the obstacle must be positioned at its borders, on the ways of

access to the positions that control it.

The second part of the forces, the reserve, must in its turn predispose the options of employment, giving priority to the night environment, and aim the interventions at increasing the firepower of the stationary unit, or at constituting it where it lacks, in order to integrate the intervention of the support weapons in the critical zones. Obviously the mobility of the reserve must be ensured, if necessary, with light vehicles, more suited to travel on the island's precarious roads.

As regards training, it must be kept in mind that the night offers the best operational conditions for the defenders, because they can make the best use of an environment well known to them and are less hindered in their movements. In particular the lower levels should acquire the capability to operate autonomously, both in stationary tasks (protection of positions) or mobile tasks (patrols) and in preventing

Above and facing page.

The concentrations of power most easily and timely achievable in the defence of an island are those obtained by fire, through the manoeuvre of trajectories. Considering the limited size of the environment, mortars are the weapons most suitable to achieve this purpose, owing to their easy concealment, fast deployment and range.

intelligence or sabotage actions by enemy raiders: it would be advisable, therefore, that all the units employed should know at least the basic elements of fighting with unorthodox procedures.

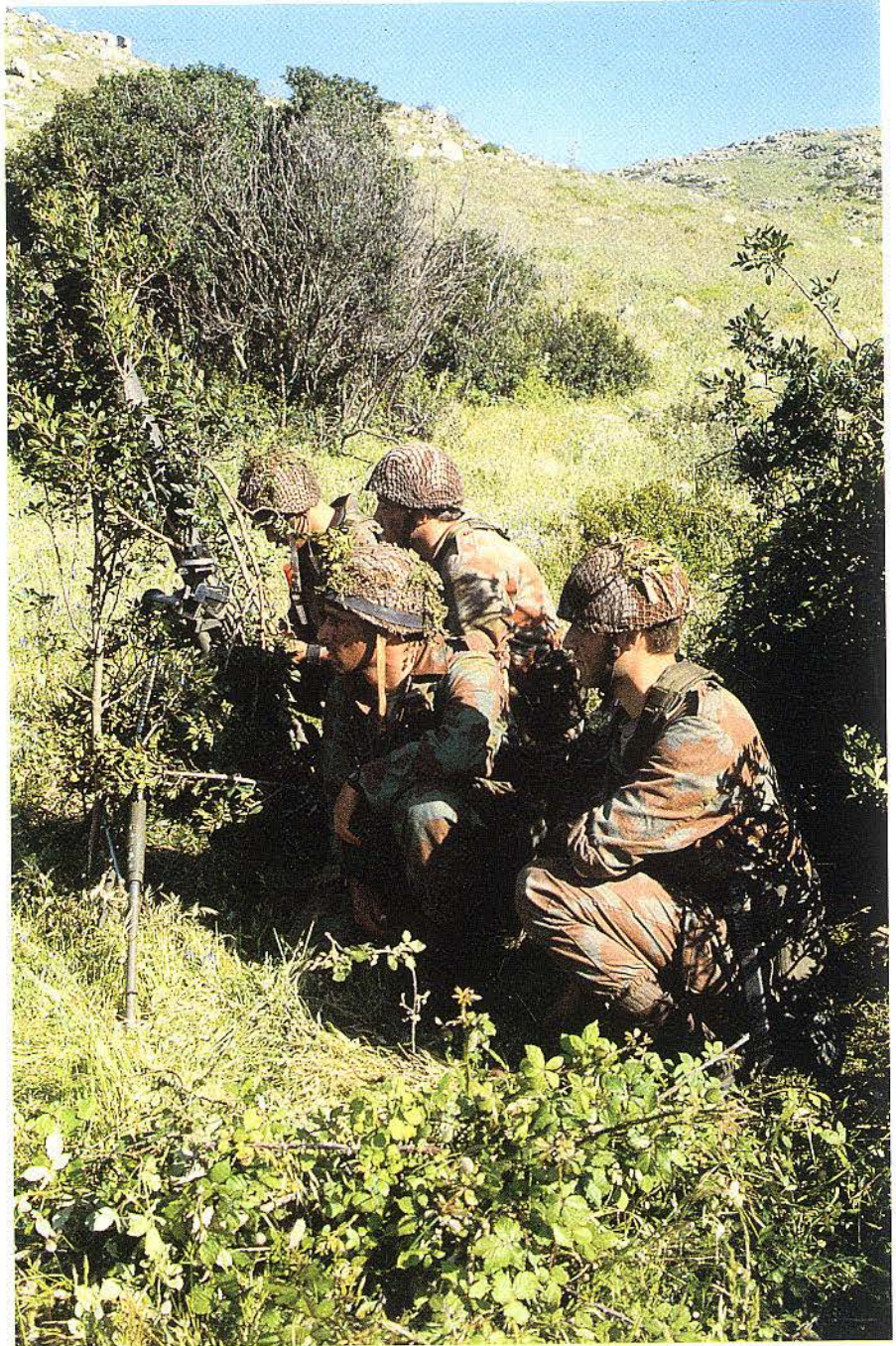
As we have seen, the organization and operational features of the forces have had a heavy influence on the outcome of the defence of Crete by the British forces and deserve particular attention; as a matter of fact, from their study one could probably derive useful hints for defining the organic structure of a task force having among its options of employment the one we are considering.

The organizational structure must be closely connected with a scenario of employment characterized by a natural environment of limited dimensions and by an enemy relying mostly on infantry – albeit a highly specialized one – with mainly direct and vertical fire support and limited availability of lightly protected weapon systems, and this only in case of air transport or landings from the sea.

The above description leads us to deem the employment of artillery as unprofitable – because its deployments would be hard to conceal and the guns would be compelled to travel only on roads suitable for vehicles – and confirms the convenience to provide a strong component of mortars, at least in part heavy ones, and in any case effective against unsheltered troops. As this component should be able to strike at the sensitive areas simultaneously from different deployments, the employment of units at platoon level could turn out to be too onerous; consequently, a prevalent employment by squad will be more expedient.

Similarly, one can exclude that there would be a need for armoured vehicles, which would be too vulnerable because of the extremely limited road net and consequently would end up being assigned support tasks, which could be performed, with the same results, by weapons carried by light vehicles or even by hand. In order to increase the firepower also at the lower levels which, as we have seen, must have operational autonomy, one must find the solution in the choice of the individual weapons, the unit's automatic weapons and self-defence arms. In this regard, the following criteria could be followed:

- acquisition of a kind of personal weapon capable of launching antipersonnel grenades, so that each fighter could intervene with exploding fire at short distances (this solution is preferable to the adoption of grenade-throwers, which



require expert personnel and would be available in limited numbers);

- provision of a large supply of antitank, self-defence and unit weapons, to be employed mostly as close support against elements that have strengthened their positions after landing. To this end, also some types of weapons considered obsolete for conventional operations, such as the "Bazooka" rocket-launcher, could be profitably employed.

The anti-aircraft weapons, which cannot be absent in a defensive operation against a prevalently airborne attack, deserve a separate consideration. While against transport helicopters and transport planes it is possible to intervene with any automatic weapons, to counter attack helicopters and combat planes, it is indispensable to have at least self-defence surface-to-air missiles, on account of the armour and



Left and right.

The troops to be employed in the defence of an island must be trained to conduct violent and resolute actions, in isolation and in high-risk and uncertain situations.

distance of release of these aircraft.

To complete the survey of the organizational characteristics, let us mention the units that should be charged with the task in question.

To that end, on the one hand one must have in mind the type of enemy, consisting of highly motivated assault troops, trained for violent and resolute actions, and on the other the primary operational need to react with resolve to the attack from the very first impact. As a consequence, the units more suitable for this task are precisely those more similar to the adversary's as regards solidity, inurement to danger, training to operate alone in fluid, high-risk situations: in substance, this series of factors leads to select paratroops and units trained to perform airborne operations.

Last, a brief mention to the command organization. Independently from the size of the island, the level should preferably not be lower than battalion, owing to the complexity of the coordination, both within the land forces and with the air and naval support operations, besides the necessities connected with the possible presence of civilians.

The aspect we want to underline is the need to have continuity of command, in order to ensure that the Commander be integrated with task, environment and units: the British had a bitter experience in Crete because they rotated as many as seven Commanders in six months. Seen in this light, a small island is to be considered as a continental defensive sector, the defence of which is planned in detail and known by the Commanders of the units assigned to its defence in case of emergency.



CONCLUSIONS

The summary examination of the battle of Crete has permitted us to focus on the main lines of the land battle in defence of an island.

The critical survey made in the past with commendable professionalism is an example to which we can still refer today, to define the criteria for planning the defence of a minor island against air and sea landings, of course adapting the procedures to the operational capabilities of the new means.

The decisive criterion has resulted to be the timeliness of the reaction, in order to hit the enemy when he reaches the ground; were he able to get a hold even on a single point, he, contrary to the defenders, would

be in a position to sustain his effort from the outside. In order to be able to react on all sides, without dispersing the forces, and despite the enemy's operational capabilities and the environmental limitations, it is necessary to adopt specific combat modalities and procedures, considering that it does not seem inappropriate to say that the defence of a minor island can be registered among the special forms of combat.

From the study of the battle of Crete at first, and then from the observation of the scenario of immediate concern to us, concrete indications have moreover emerged which, besides being useful in the planning and conduct of combat, constitute a starting point for considering the operational,

training and organizational aspects of the employments examined here.

In particular, from the operational standpoint, an island must be considered as a defensive sector of the combat zone in relation to planning and attribution of responsibility, keeping in mind that the solution of the problem is affected by the lack of space, which allows of no margin for recovery, and by the need to promptly intervene in the vulnerable areas.

The deriving procedures undoubtedly differ from those followed in a "conventional" defensive operation, for the role assigned to the support fire, for the employment of the reserves – essentially in tasks of reconnaissance in force – and for the marked pulverization of



The fire capability, also at the lowest levels, should be increased with a large supply of antitank, self-defence and unit weapons, to be employed mostly as close support against elements that have strengthened their positions after landings and air-drops.

- suitability of mortars for the support fire, instead of artillery;
- unsuitability of armoured and mechanized means as weapon systems; the role of support with exploding fire against possible consolidated elements can be assigned to a strong component of light antitank weapons (including those considered obsolete for their original tasks);
- expedience of equipping the men with a personal weapon, suitable for launching grenades (rather than actual grenade-throwers), in order to maximise the capability of delivering exploding fire;
- lastly, need to possess an anti-aircraft component, effective against the enemy deliverers of vertical fire, at the distance of release of their armament and with assured effective results against their armour.

In conclusion, the preceding remarks have been limited to the survey of the sole procedures of land combat and of the organizational aspects directly connected with it, overlooking the air-naval component; nevertheless, they have outlined a complex operation as regards planning and modes of execution. The reference to the British experience has undoubtedly given a valid contribution of thought in the organization of the defence of an island. The unhappy outcome of the defence of Crete has indeed demonstrated that preparations are of no value if they are not vivified by a bold offensive spirit that cannot be improvised for the occurrence but must be a natural habit of the units employed.

Col. Franco Monticone

the action. The training of the units concerned must be aimed at meeting these requirements.

Finally, a brief mention of the indications concerning the organization. In general, the conclusions are that the characteristics of this combat induce us to prefer, for this specific

employment, the units whose training has originally been directed towards this type of operations, such as airborne troops and paratroops. On the other hand, equally interesting indications have emerged about the structure of the units to be singled out for this task:

13 Cassanovo - Berrettini di pelle alla Legione Italiana
Telbrajo -

5 Aprile - Parte per l'isola d'Elba il 14. Deposito della
Legione Italiana

6 Giugno - 150 "coscritti" partenti per la Div. Ital. in Francia
 sono muniti di cappotto e stakio.

Regno d'Italia 1805/5

Guardie di Finanza =

Ufficiali, capo e guardie
 figurati a colori in = Lancia
Fatti militari dei Finanze

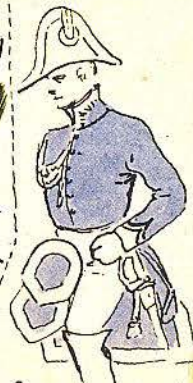
Dragoni Regina

Come il Napoleone, eccetto:
 Mostra rosa
 Financiere

Dragoni Napoleone



Petto e colletto
 cremisi - suora filata alla tasca



Commissario di
 guerra del Q. R.

Bianco?

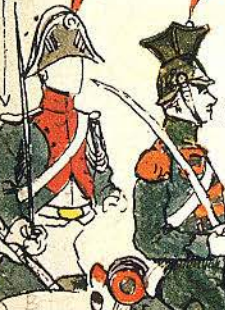
Dragoni della Guardia = Elmo c. d. ma con pelli di leopardo

Granata nella guadrappa che è c. d.
 nella fascia di centurione
 Gallie nere, piume bianche in rosso
 Squadra dritta in campo
 Petto e cordoni bianchi - colletto verde
 Aquila sulla giberina



Pontonieri del Genio = (dalla
 mostra nera f. battate celeste) (Zaniffi)

Geno?



Dalla stampa di Focosi
 Rassegna di Montebianco - 13-6-05
 Artiglieria
 o cavalleria

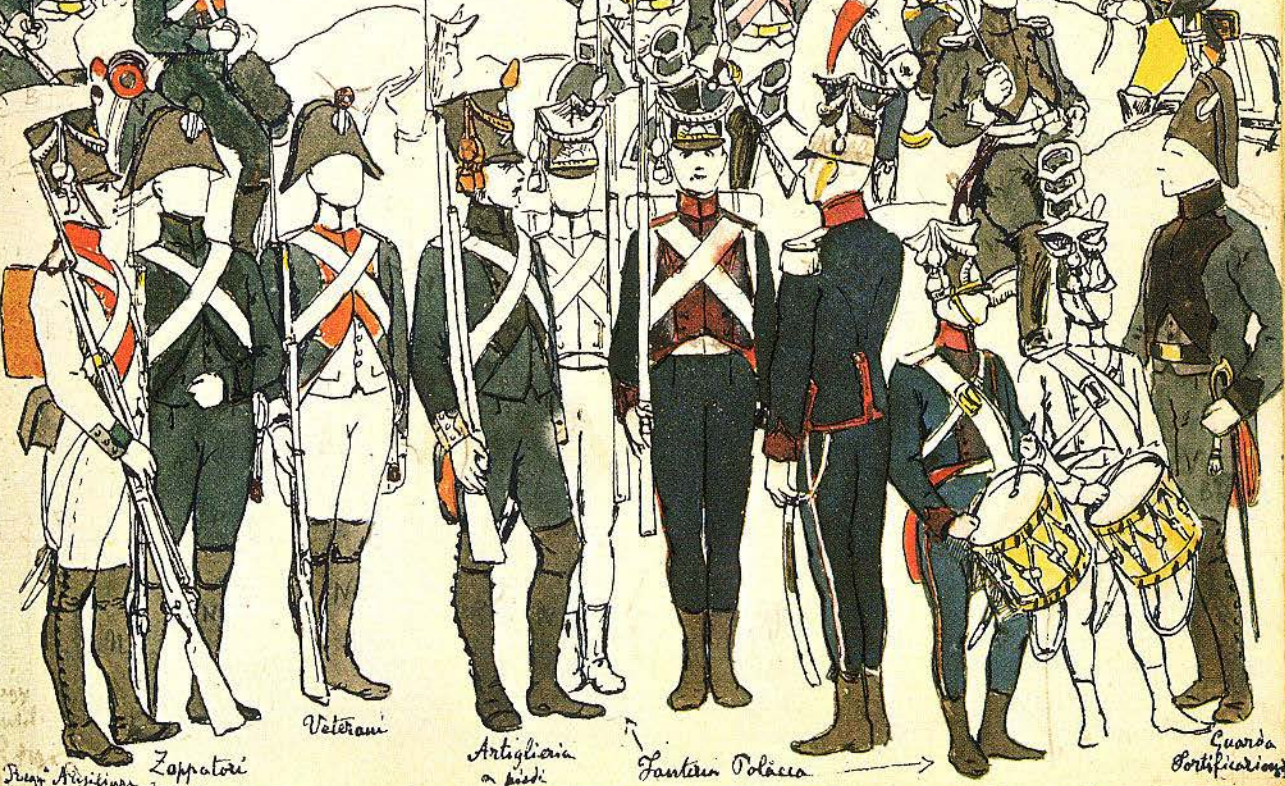
Dragoni
 Regina

Dragoni
 Napoleone

Lanciere
 polacco

Ufficiale
 del Genio

Genio



Zappatori
 2.02.18

Veterani

Artiglieria
 a piedi

Lancieri Polacco

Guardia
 Pontificaria

AN OPINION ON MILITARY JOURNALISTS

The law of 3 February 1963, no. 69 "Regulation for the profession of journalist" instituted the Association of Journalists and consequently abrogated the norms of the R.D. February 1928, no. 384.

The law in question states that this Association is the organ to which the professional and independent journalists listed in the respective rosters

belong, and moreover acknowledges as "professional" only those practising in an exclusive and continuative way the journalistic profession; the "pubblicisti" ("part-time"), instead, are those who carry out a non-occasional and paid journalistic activity, even though they practice at the sametime other professions or hold other positions. The law furthermore fixes

the requisites, conditions and procedures necessary to be listed in the two rolls. For "professional journalists", besides a degree at high-school level, a period of novitiate is required: an 18-month apprenticeship period with a daily newspaper, a news agency or a periodical of nationwide diffusion (also the R.D. of 1928 established the same period of apprenticeship), at the end of which the candidates must take an examination to prove their professional ability before a special commission. Furthermore, for the apprenticeship to be effective, the law determines the number of professional journalists that must be ordinary members of the editorial staff: 4 for the dailies, 4 for nationwide agencies and 6 for periodicals, also of nationwide diffusion.



In order to be enrolled as a "pubblicista" (professionally designated as "journalist" and as such protected by the law), the norms differ from the ones provided for in the past by the law regarding the List of Journalists.

Before requesting to be enrolled, the candidate must carry out an activity as "pubblicista" for over two years (in practice, 24 months and one day), during which he must publish signed articles on "news-papers and periodicals" (art. 35). Nothing is said about the "number" of pieces, leaving that to the fully autonomous decision of each Council.

In the current practice, especially with reference to the Association of Lazio and Molise, no less than 60-70 written pieces are required in two years.

This figure reflects the juridical difference between the entrepreneur, who carries out a steady industrial or commercial productive activity, and the person who only undertakes entrepreneurial activities at irregular intervals.

There must be indication of continuity and professionalism given by the number and not by the quality of the written pieces. In fact, the law requires a non-occasional and paid activity.

Most are of the opinion that one should not evaluate what is written, but only make sure that the piece is presented according to the current journalistic techniques; one should check the graphic outline with which the writer presents the communication, i.e. the message contained in his writing.

Others instead go against this thesis, taking the qualities required for entering the other List as fundation for their argument.

The writing cannot embody an infringement of the legal norms, although this is a problem difficult to tackle and to resolve.

The impression derived from reading art. 45 (no one can assume the denomination nor practice the profession of journalist if he is not in the professional List) is that the field of plain and bare information (daily news) cannot be invaded; this is also supported by a decision of the Supreme Court of Cassation. Nevertheless, this impression is in contrast with art. 21 of the Constitution, which sanctions the freedom of expression. On the other hand,





one cannot forget art. 45 which speaks about "practice" or, more approximately, about "practicing". What is the literal meaning of "practicing"? The dictionary defines it: "to be regularly engaged in a profession or activity".

Now, does the "pre-pubblicista" infringe the law if he, for example, is engaged as reporter, correspondent or interviewer? He is not recorded in the List and even less in a register, as is the case for the "apprentices". To answer the question and to dispel all doubts, the jurisprudence of the National Council of the Order of Journalists is of no help.

A special List of directors of technical-scientific publications (art. 28), has been constituted and is attached to the List of Journalists. This had already

been provided for by the R.D. 26 February 1928.

The above considerations outline the formalities that must be followed in order to be entered in the List, but they do not provide a solution for the numerous problems that have come to the surface along the years.

Among these problems there is a weighty and controversial one, related to the "freedom of antenna" sanctioned by the well-known ruling of the Constitutional Court. The professional law contemplates only journalistic activity employed by the journalistic services of RAI, the Italian National network. Since the decisions of the Councils – each one of them interprets and applies the law autonomously – are certificatory-constitutive provisions, i.e.

typically administrative proceedings, the analogy is scarcely applicable because the law itself establishes the conditions and requisites: in short, it delimits the borders that must not be trespassed.

A different problem is the one concerning the periodicals published by the Ministry of Defence. A subject that a few years back drew the attention of the Committee of the National Federation of the Italian Press, which nevertheless could not draw a conclusion.

Some of these publications are essentially technical – they could be called "institutional" – and in this case they are within the province of art. 28 of the law. Those working in this sector, according to the present regulation do not engage in a journalistic activity because

the editor has no certification powers and furthermore the publications do not have journalistic purpose. Other publications are more in keeping with the concept of information; therefore, according to the norm, they must have a listed editor. In fact, this is the case with the two more widely diffused magazines ("Rivista Militare" and "Quadrante").

These publications have their own editorial staff, a journalistic organization independent of other ministerial structures and avail themselves of contributors and members of the staff. The latter are employed in "kitchen" work, or as correspondents, reporters, reviewers, clickers, etc.

As a consequence of this, new positions have come into being. Since the work done is exclusively of the journalistic kind, even though it lacks a proper denomination, it falls under the collective contract for journalistic work (editors, reporters, regular contributors and correspondents) and the wage scale established by the Committee of the National Journalist Association (for those who have no contract).

According to the standing law, one must not forget the de-facto staff member. In short, he is someone who although not on the Journalists' List, deals with news in a permanent way, keeps working hours, follows the instructions given to him and has the right to fall within the collective contract. Undoubtedly, even if he wears a military badge the "de-facto"

journalist performs a special function.

This means that also in this case the collective contract for journalistic work is applicable. The contract contemplates, as from December 31, 1985, the following wages: 1,104,889 Lire minimum wage, plus the allowance linked with the cost of living, an additional month's wage at the end of the year and 2 "editorial" allowances of 1,000,000 Lire each; as from April 1, 1986, the minimum has increased to 1,203,889 Lire and on March 1, 1987 will reach 1,303,889 Lire.

What to do? It is common knowledge that the public structure shrinks from innovations, owing especially to the position of the General Accounting Office and the Court of Accounts, which depend on regulations, circulars and norms not in line with the evolution of the times.

Professionalism, in economic terms, has no special rights. In this particular case, nevertheless, we see an emerging professionalism, attested by the success of the strictly military publications ("Rivista Militare", "Quadrante", "Il Carabiniere"). A professionalism which must somehow be recognized and quantified, also considering the technical and cultural efforts made by the military engaged in "journalistic activities".

This professionalism could be acknowledged in two ways: the acquisition of the title of "journalist" with the procedures provided for by the law of

February 3, 1963, no. 69, and through an economic recognition.

At the same time, we cannot omit to say that the problem is not unknown to the representative organs of the category which, within the laws in force, have recognized the fact that there is a form of emerging journalism, constituted precisely by the military journalists.

In conclusion, we must recognize that the military engaged in the difficult activity of outlining and illustrating the image of the Armed Forces and their contribution to the Country are endowed with a very high professionalism.

Gino Falleri



Gino Falleri, Vice President of the Association of Journalists of Lazio and Molise, holds a university Law Degree. He began his professional career with contributions to "Il Messaggero" and "Momento Sera". He was a member of the editorial staff and correspondent of "Il Popolo di Roma" and "Il Corriere della Nazione". Later, Dr. Falleri became Head of the Public Information Office of the National Organization for the Prevention of Accidents. At present he is a "free lance".

AN OPINION ON MILITARY JOURNALISTS



Pascal Boniface • François Heisbourg

LA PUCE LES HOMMES ET LA BOMBE

L'Europe face aux nouveaux défis
technologiques et militairesPréface
d' André Fontaine

Hachette

P. Boniface, F. Heisbourg:
"La puce, les hommes et la
bombe" ("Microprocessors, Men
and Bomb"), Hachette, Paris,
1986, 318 pp., FF. 110.

Two influential French military experts (F. Heisbourg was an advisor to Minister Hernu and is now vice president of Matra) propose the promotion of European military technology. They believe it would constitute the basis and stimulus for European technology and industry. The project would be based on the institution of a French-German agency similar to DARPA (Defense Advanced Research Projects Agency), which other European countries would then join. The timing for the project is right. The political, industrial and economic situation precludes the short-term development of European technology and industry. This is clearly demonstrated by the difficulties encountered with the *Eureka* project – a few successful EEC programs for new technology excepted, e.g., *Esprit* for computer-based information systems, *Jet* for fusion energy, etc.

Only France and Germany are in a position to assume the leadership of the old continent and promote policy favoring technological and industrial innovation. The military sector, which is under the control of the various governments, is the preferred target because it is more responsive to political will and direction. We should also bear in mind that there exists a history of successful collaboration between the French and German defense industries and armed forces which has been

recently affirmed by new agreements between Mitterand and Kohl. Such collaboration should be intensified at all levels: from the "micro" level of basic components to the "macro" level of the big command and control systems for theater anti-aircraft and anti-missile defense. It is essential that it take place. At the end of the century Western security will be vulnerable to a Soviet conventional missile attack, which is becoming the foremost threat to Europe because it circumvents "from below" the American nuclear deterrent.

Europe is losing ground to the States and Japan in advanced technologies, which are essential to its defense and economy. This is due to a lack of focus in European research and development projects. The resources exist. In 1982 Europe spent 65 billion dollars on scientific research and technology as against 100 billion spent by the United States and Japan in advanced technologies, which are essential to its defense an ever greater European dependency on foreign sources, especially with regard to critical technologies, which are the ones that will determine the future course of the economy and of defense. Add to this European inertia, which causes delays in the industrial application of technological innovations. Too much money is wasted on the survival of mature or obsolete industries and technologies: because of them Europe is uncompetitive compared to newly industrialized countries. The lack of competition due to "senile" protectionism by the various European states prevents the standardization of products, competitiveness on the world markets and self-financing of industries. The only hope lies in deregulation, in effective competition that stimulated innovation and initiative and in a more mobile work force.

Military research and industry are the ideal leaders of the proposed project because, as mentioned, they are more effectively subject to governmental direction than other sectors and because the "weight" of research is increasing. It has increased from 10 percent in 1960 to 15 percent in the seventies and is now rising to 30 percent of the total cost of advanced weapon systems. Moreover there has been an increasing convergence of military and civilian technologies in key sectors, particularly in electronics. The latter is the critical sector and it absorbs 50 to 60 percent of the value of the most advanced weapon systems. Only a grand, concerted military effort can reverse the present trend of European estrangement from world markets. But to achieve this it is necessary to understand that Europe must find the remedies to its own ills within itself. It is not realistic to hope for a technological Marshall Plan consisting in America's financing European competition. Complete strategic and technological independence of

Europe from the U.S. is highly improbable if not impossible. However, Europe can remain a respectable partner with the strength to complement the U.S. There is no other solution, unless we are willing to accept a disastrous decline in the medium to long term.

Carlo Bess

CHATHAM HOUSE
SPECIAL PAPER

The Nuclear Debate:

Issues and Politics

Edited by
Phil Williams

The Royal Institute of International Affairs RKP

**Phil Williams (ed.): "The Nuclear
Debate - Issues and Politics",
The Royal Institute of Inter-
national Affairs, Chatman House
Special Paper, London, 1984,
81 pp., £ 5.95.**

This volume, to which four of the most influential British experts on political and strategic issues have contributed (P. Williams, L. Freedman, C. Coker and G. Cowen), examines the state of European security in the wake of the deployment of Euromissiles and the breakdown of Soviet-American negotiations in Geneva in November 1983. Although the situation has undergone profound changes since then, it is interesting to examine the various problems foreseen at that time especially with regard to the assessment of the consequences of the breakdown in disarmament negotiations on European pacifist and antinuclear movements.

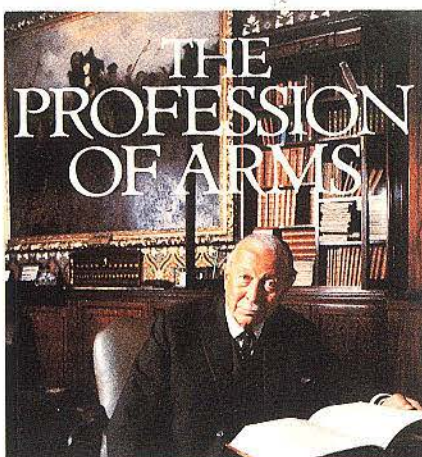
The first two essays analyze the problem of the so-called "two track" and "zero option" NATO decision – to deploy Pershing 2 and Cruise missiles but withdraw them if the USSR dismantles the SS20s – adopted in 1979 and recently revived by last January's proposal by the Soviet leader Gorbachev. He proposed complete nuclear disarmament.

ment, on an "expanded zero option", to be accomplished in three phases before the end of the century. The proposal is a challenge to the Western security system, which is based on nuclear deterrence and, more important, on the U.S. commitment to defend Europe even with the use of nuclear weapons against a conventional Soviet attack. In practice Euromissiles constitute a part of America's main deterrence deployed in Europe. Their significance is political rather than military. It links Europe's defense to the main deterrence system, thus reducing the likelihood of a limited war in Europe. The possibility of the latter has created tensions within NATO because of its unacceptability to Western Europeans. The NATO "two track" decision raised significant obstacles to strategic nuclear arms control negotiations by introducing a new, particularly delicate variable for European-American relations in the arms control debate.

The second part of the volume is dedicated to the pacifist and antinuclear movements. They gained momentum in Great Britain and continental Europe because of the Euromissile issue but produced for the most part emotional responses rather than politico-strategic theories alternative to NATO. This constitutes a definite limitation on the impact of pacifism on the decisions regarding Western security and defense policy. Moreover, the European pacifist movement is extremely fragmented from an ideological and organizational point of view, with the result that it is impossible for it to reach the "critical mass" necessary to become politically significant. In general the various movements achieve a certain weight in the internal politics of their respective countries but tend to develop along independent rather than converging and coherent lines of action.

Lastly, there are profound differences between countries with regard to their individual political-strategic situations. The breakdown of the Geneva negotiations has not had a significant impact on pacifist movements perhaps because they favor symbols over detailed analyses of the situation.

The authors do not reach definite conclusions. The volume, rather, identifies problems; and while it underlines European uneasiness of even the political and cultural forces most favorable to NATO on the issue of using theater nuclear weapons in the direct defense of Europe against a conventional Soviet attack, it does not set out a-priori solutions nor offer a clear forecast of the probable evolution of the situation. In this respect it maintains currency despite the changes brought about by the U.S. strategic defense initiative, the resumption of the Geneva negotiations, the Reagan-Gorbachev summit and, finally, the nuclear disarmament proposals of the Soviet leader.



J. Hackett: "The Profession of Arms", Sidwick and Jackson, London, 1984, 239 pp., £ 18.95.

General Hackett, ex-commander of the Northern Region of NATO, lecturer at King's College and author of the popular *The Third World War*, offers in this volume a synthesis of the evolution of the military profession.

Only a broad historical perspective allows one to come to an understanding of the role of the profession in international relations, its internal workings and its relation to society and political institutions.

The profession of arms in our time has its roots in the citizen-soldier of the Greek city-states, in the Roman military organization, in the knights of the Middle Ages and in the first national armies of modern states. With the French Revolution and Napoleon the all-encompassing character of war and militarization reemerge, and have a determining effect on strategic structure and doctrine, on the use of the military as a cohesive force in nation-states and on its use as an instrument of international politics.

Technology has had a direct impact on the arms profession by determining the structure and use of the armed forces and by determining whether the use of force is called for to achieve defense or conquest objectives.

The military profession is characterized by a remarkable continuity over time. It has remained essentially unchanged despite the advent of weapons of mass destruction and the emergence of the doctrine of deterrence, which assigns priority to the potential use of force over its effective use. Every military organization must of necessity be an authoritarian body, even in a democratic society; its efficacy depends, in fact, upon the ability to carry out orders immediately, which is necessarily

the result of discipline and a hierarchical system. Moreover, even where military men can be used politically as "guardians of the peace", they must necessarily be oriented toward war in a structural and psychological sense. The only way they can concur with maintaining peace is by being ready to wage war. Cohesion, which is the basis of the operative efficiency of troops, is founded on leadership, which engenders psychological and social ties that prevent disintegration in battle, and on symbolic values such as duty, honor and country. Without them there can be no army. Military ethics must not, however, be in conflict with the system of values existent in civilian society. The army's reason for being and strength are grounded in the nation. Although there has been a tendency in contemporary Western societies to separate military and civilian, it must not translate into divergence and opposition lest it create tensions that will weaken the integrity of the armed forces.

The Defense Industry



J. Gansler: "The Defense Industry", MIT Press, Cambridge, March 1984, 346 pp., \$ 12.50.

This volume constitutes a fundamental contribution to understanding the U.S. defense industry. Its history, present institutions and prospects are analyzed with reference to the needs and worldwide responsibilities of the U.S. armed forces.

The author criticizes the defense industry's lack of adequate industrial planning and insistence that military procurement emulate a free market, thus



favoring the short over the long-term. Adequate studies of these faults are lacking. Almost all the studies have been aimed at examining the ways in which the Defense Department reaches decisions and oversees their implementation rather than at the ways in which the U.S. defense industry organizes itself to meet defense needs.

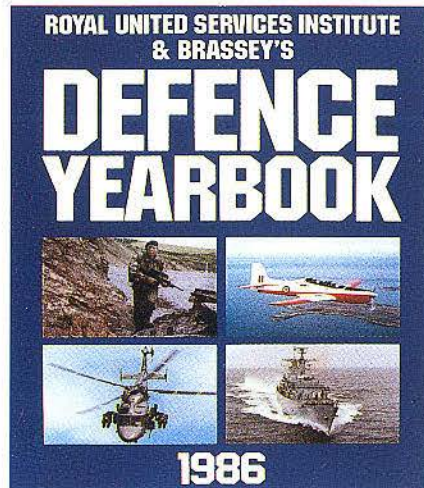
The major drawback of the present system consists in the fact that to the monopoly of demand by the armed forces is opposed an oligopoly of supply by the highly integrated industrial corporations that operate in the sector. The Defense Department allows industry too much freedom to organize itself ad hoc and fails to intervene to eliminate areas of inefficiency and inadequacy, especially where it concerns the inability to meet production "spikes" during an emergency. In other words, the Defense Department has not concerned itself with problems of industrial mobilization; in fact, it allowed the defense industry to disintegrate after the Vietnam war, as it did after the first and second world wars, in response to a temporary drop in the armed forces' procurement needs. This caused a loss of planning and production capacity paid for directly or indirectly with public funds.

The analysis extends to the three operative levels of the defense industry: the general contractor, with organizational capacity; the subcontractor, with subsystem capacity; and suppliers of basic components. The critical elements of the system are not, according to the author, at the level of the general contractor, but at the lower levels. These have a determining effect on the capability to increase production in peacetime.

The problem is aggravated by the fact that the U.S. share of the world commerce in arms has decreased. Moreover, foreign markets cannot absorb the excess production capacity and reserves that the American armed forces would need during a sustained crisis.

Finally, economic and industrial integration in the West has been the cause of progressive U.S. dependence on foreign suppliers for many critical materials. Other distorting factors consist in the method of payment adopted for sales of American weapons systems to allies, the Europeans in particular, and in the generosity with which the U.S. transfers technology which then favours European over American industries on world markets.

In order to solve these problems the U.S. government should develop a long-term policy aimed specifically at rationalizing the defense industry sector. Partial nationalization should not be dismissed as an expedient to shield the sector from the aleatoric interests and decisions of private industrial groups which, by their very nature, operate according to laws which do not serve the long-term collective interest.



Royal United Services Institute & Brassey's: "Defence Yearbook 1986", Brassey, London, 379 pp., £ 29.95.

The Royal United Services Institute (RUSI) yearbook always distinguishes itself for the breadth and variety of sectors to which essays by eminent English experts and experts from other countries on military and security issues are dedicated and for the authoritative nature with which views are propounded – due, to a significant extent, to the fact that many collaborators occupy high posts in the British armed forces and government.

Given the diversity of the essays it is not possible to comment on each separately. A list of them gives some idea of the contents of the volume. Lord Carrington, Secretary General of NATO: "NATO and European Security"; King Hussein of Jordan: "The Arab World: Prospect for Stability"; Adm. Fieldhouse: "Problems in the Defense of the United Kingdom"; Philip Windsor, of the London School of Economics: "Relations Between the Superpowers: Perceptions of the USSR and Eastern European Countries"; David Abshire, U.S. Ambassador to the NATO Council: "Superpower Politics and their Perception of Europe: the U.S. Point of View"; Gen. Burgess: "Current Military Thought"; Maj. Wright: "Emergent Technologies: Myth or Salvation"; Lawrence Freedman, of King's College: "Flexible Response and the Concept of Escalation"; David Robertson, of Oxford University: "Burden-Sharing in NATO: the Problem of Comparing Military Expenditures"; Malcolm MacKintosh, Soviet Affairs Specialist of the Cabinet Office: "Developments in Warsaw Pact Policy"; K. C. MacDonald, Defense Undersecretary: "International Collaboration in Arms Construction and National Interests"; Trevor Taylor, of the North Staffordshire Polytechnic Institute: "Collaboration Between

European Defense Industries"; Michael Binyon, *Times* correspondent: "Public Opinion and European Security"; Adm. Lord Lewin: "The British Nuclear Deterrent: A Successor for Polaris"; Anthony Cordesman, American strategic expert: "Military Forces in the Maghreb: The Next Decade"; William Gutteridge, of the University of Birmingham: "South Africa: Security Risks"; Brian Bridges, of Chatham House: "Japanese Interests and Security in the Pacific".

The volume concludes with an interesting bibliography covering 1984 and 1985, a detailed chronology of the main events of those years and a list of the principal international research organizations in the defense and security sectors (not one Italian organization figures among the hundred or so listed).

Once again this year RUSI, which was founded in 1831 to study defense problems and publicize military culture, has lived up to its reputation. Individual subjects are treated in a pragmatic, typically Anglosaxon, style that favors facts over interpretation and, more important, over general theories to explain and categorize them. Facts speak for themselves. It is left to the reader to interpret and understand their significance.

Carlo Bess



"In pace e in guerra sempre e solo pastori" ("In War and in Peace Always and Only Pastors"), Published by the Italian Military Diocese, 135 pp.

In this volume the military chaplains introduce themselves. They have a very respectable service record: over 60 years of tradition and loyalty to the



same cause, that is, the man who serves the country in peace and in war. It is a "service" of religious and spiritual assistance which they prefer to call "pastoral" because it is always and only on behalf of man.

During the tragedy of the two world wars their loyalty was to man. It was demonstrated through religious comforting, ministering and by episodes of heroism and solidarity with the men in the sea and in the air, with the men who turned into sand or mud in their trenches, with the men who froze in forward observation posts, with the men who suffered unspeakable hardships in endless marches, with the men who in hospitals, prisons and concentration camps wanted to live but suffered and died – always and only on behalf of man. It is a "pastoral" service honored by the chaplains who died with their dead, were lost among the lost, were prisoners

with their prisoners; by thousands of priests who paid tribute to the "burdensome and glorious martyrology", not for human reward, but with certain faith in having served man, citizen and brother in the name of He who ever recognizes this service of love.

It is a "service" that has been recognized, institutionalized and developed by the state over time and that evidences a genuine and responsible duty to provide spiritual assistance to the armed forces and enhance human values in all aspects of military life.

This is an increasingly difficult task in times of rapid change; and the man who suffers most is precisely that man – that young man – who is called upon to fulfill "one of the highest duties of a citizen", a duty to which "they" – the chaplains – continue to give the best of themselves. It is a "peace service", as defined in the volume, conducted in

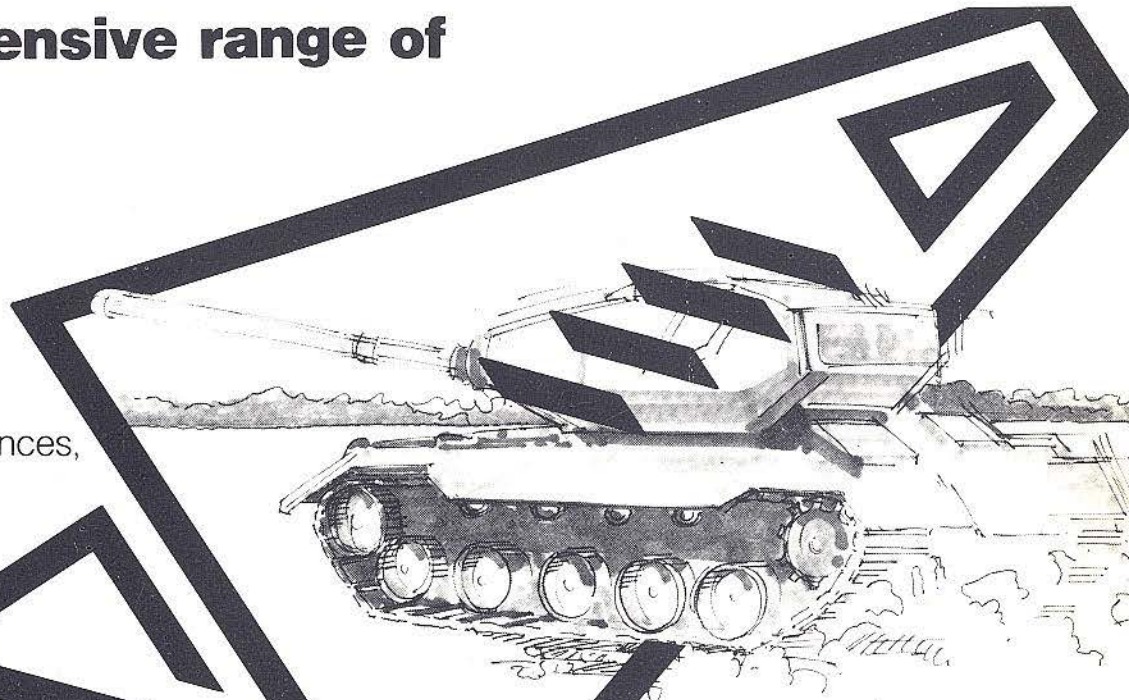
an atmosphere of upheaval to which the Church devotes careful attention and effort in the name of "peace in liberty", with 300 priests to whose pastoral care God entrusts a half-million men. It is a duty which the chaplains fulfill every day, living the life of the man at arms, witnessing his disorientation, and comforting, enlightening and defending the man's good moral conscience while serving the cause of justice and peace.

In an introduction to what he calls lightly an "essay-collage" that covers news and events and connects a glorious past to an ever-changing present, the Chaplain of the armed forces emphasizes growth of human values over a simple, if dutiful, celebration of loyalty to the ideal of service. This volume is dedicated to those who have the good of the Church and of the country at heart. It is an effort to elucidate Italian religious history through the history of

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the pastoral mission of the military chaplains. It is a factual rebuttal of the widespread radical and permissive attitude found today in civil, military and religious circles, regardless of political orientation. It is an invitation to assume, as the Gospel commands, the demeanor of brothers who do what has to be done, to the best of their ability.

Does it deserve a full reading? Yes.

If for no other reason than to answer these two questions:

1. why would a chaplain volunteer again to be a chaplain; and
2. how can one serve peace while "at arms".

They really do not show their 60 years of age. They wear them well.

Lorenzo Marchesi



V. Piscioneri: "Lancio di guerra. Diario di un paracadutista, Poggio Rusco, 20 aprile 1945, Operazione Harring" ("War Jump. Diary of a Paratrooper, Poggio Rusco, 20 April 1945, Operation Harring"), Varo, Pisa, 1985, 76 pp., L. 6.000.

In all emergency situations or desperate situations man essentially reacts in two distinct ways: flight from a reality that is too disturbing or acceptance of the reality, even if painful. Man needs the company and unity of a group to find the strength to react and not succumb. This strength allowed the author to perform commendably in a paratroop assault in the Po Valley on the night of 20 April 1945.

In this brief war diary the author recounts the experience he lived and keeps the narrative as close to the facts as possible.

On the date in question the Germans were withdrawing but still offered strong resistance in several points. It was essential to prevent them from retreating in an orderly fashion to the Po, to create obstacles along the line of retreat, to cut communications lines between command and troops and to create panic and confusion.

This task was assigned to the paratroopers of the Nembo regiment and the Folgore reconnaissance squadron.

From 22.00 to 23.00 hours on the 20th, 245 men were parachuted over the entire enemy territory in the midst of an anti-aircraft barrage. Once on the ground they found themselves completely isolated, without any contact with aircraft units or ground troops. This volume includes a generous selection of photographs and the names of the participants in that action.

It is a very detailed, easy to read diary that will be of great interest to those who participated in the last phases of the war.

Ferdinando Schettino



U. Pelosio: "Le fortificazioni nel veronese. Evoluzione ed armamenti. 1830-1915" ("Veronese Fortifications. Evolution and Armaments. 1830-1915"), HQ LANDSOUTH, Verona, 1986, 94 pp.

The period between 1830 and 1915 belongs to the modern era of fortifica-

tions. During this period, in fact, defensive systems underwent evolution from entrenched camps with forts made of masonry and mortar, typical until 1885, to entrenched camps with steel and cement forts characteristic of subsequent times until 1915.

During the same period, and particularly in the last decades of the century, artillery also underwent radical changes, from forward-loading, smooth barrels utilizing spherical projectiles to modern rear-loading ridged guns of great power, with deformable gun-carriages, utilizing vaulted projectiles.

This volume by Lieutenant Colonel Pelosio complements the latest revised and expanded edition of *Verona Militare*, published in 1983; it supplements the section on the evolution of siege and defense fortifications and artillery during the period from 1830 to the first world war.

The Author provides a panoramic view of these "monuments" by describing and illustrating them with technique, rigor and command of the material.

The recourse to ample photographic documentation, drawings, maps and charts should not, therefore, be considered a mere graphic expedient but, rather, a way of adding historical, cultural and environmental material to the text.

The volume examines the evolution of artillery with special attention given to siege and defense artillery.

The author points out that the evolution of permanent fortifications reflected, in essence, on ongoing effort to adapt to the ever greater power of siege artillery: in other words, an eternal battle between cannon and armor in which the former always seemed to have the better of the latter.

This work points out that defense artillery, which was ultimately tied to fortifications, also underwent constant increases in firepower while offering greater safety to personnel and materials.

As General Donati points out in the introduction, publication of this work gives access to valuable and reliable information gathered from a meticulous bibliographical and chronological research of national and Austrian texts.

To conclude, this volume is particularly important and interesting for the guidance and advice it can offer to those who, for whatever reason, wish to examine the considerable historical and cultural patrimony constituted by Veronese fortifications.

Massimiliano Angelini



PER
LA CULTURA
LE TRADIZIONI
E L'IMMAGINE
DELL'ESERCITO



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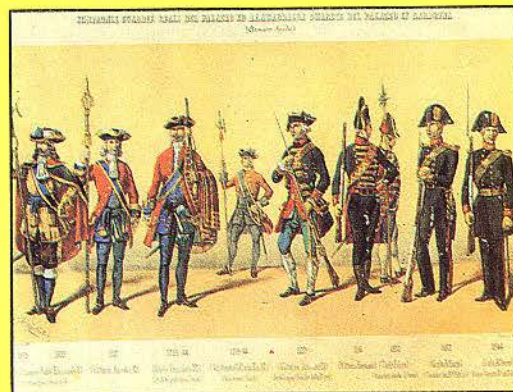


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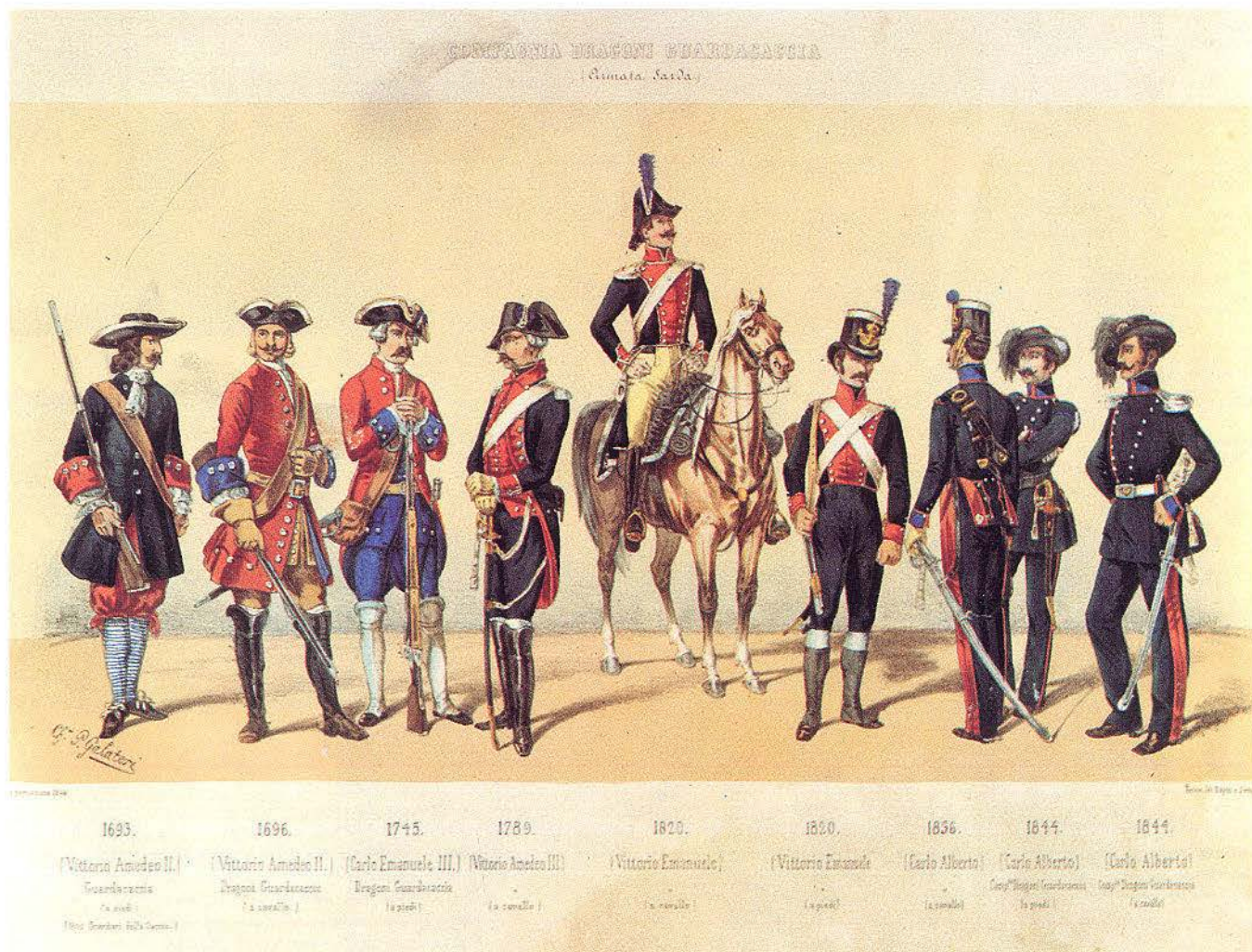
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STRATEGY AND HIGH COMMAND



Everything has been said about strategy, or almost everything. The definitions of this "Art" (or is it a "Science"?) have followed each other starting from the Greek era, in which the term "strategy" was mostly understood as "military campaign".

To recall the numerous expressions formulated along the times, or the most significant at least, would prove a mere academic exercise if from the succession of the various definitions one could not remark the evolution of the concept itself.

First of all we must underline that "strategy" has always been distinguished from "tactics", the latter being the art of executing an action on the battlefield. Considered by some the science of the Commanding Generals, in the 18th Century strategy

appeared as the combination and synthesis of all military knowledge. That is, a kind of collection of experiences which, in epochs lacking in significant innovations (XVII and XVIII centuries) was the only matter that one generation could hand down to the next. At the times of the French Revolution and Napoleon's Empire, strategy was elevated to the rank of science of movements and plans and defined by Clausewitz as battle management, as compared with tactics, which concerned only the employment of troops in combat.

Moltke, who could not fail to be among those interested in the problem, with most appropriate terms attributed to strategy the power to indicate "where" and "when" to fight, leaving to tactics the "how", i.e. the methods of combat.

As much as the innovations in the field of armaments – and therefore in that of doctrine – progress, so does strategy become increasingly the leading line which indicates the conditions most suitable for conducting a battle, and strives to make those conditions more and more complementary and closely linked together.

Nevertheless the choice of this line and its adaptation to the events are more or less influenced by political considerations. This determines overlaps, in which politics and strategy intermingle, so as to make a clear distinction almost impossible.

Also Winston Churchill was of the same mind in 1945, as he maintained that it was practically impossible to extricate the irritating question of making a clear delimitation between the

ALCUNI CORPI SOPPRESSI DI CAVALLERIA (dramata, Sarda)



1683	1689	(1726/1744)	(1735/1744)	1774	1774	(1774/1789)	1820	1820	1820
(Vittorio Amedeo II)	(Vittorio Amedeo II)	(Carlo Emanuele III)	(Carlo Emanuele III)	(Vittorio Amedeo II)	(Vittorio Amedeo II)	(Vittorio Amedeo II)	(Vittorio Emanuele)	(Vittorio Emanuele)	(Vittorio Emanuele)
(Dragoni Biscani del Re)	(Dragoni Verdi-più Genovesi)	(Drag. Liguri-Sardi)	(Dragoni alla Regina)	(Austa Carolina)	(Dragoni del Chiabrese)	(Dragoni dei Camporeschi)	(Cacciatori R. di Sardegna)	(Cavalligioni del Re)	(Dragoni del Re)
	(poi dell'Albergo poi Cavalligioni del Re)	(poi Cavalligioni Sardi)	(Cavalligioni R. a Sarda)	(Cavalligioni)	(Cavalligioni)				(Cavalligioni)

political problems and all other problems.

A more modern position is held by General Beaufre, a well-known French student of high-level military problems, according to whom strategy is the "art of a dialectic of wills, with the employment of force to resolve the conflicts" or also "the art of obtaining a decision through the determination and exploitation of a situation which entails the moral disintegration of the adversary, to the point of making him accept the conditions that are imposed on him". It is certainly a more comprehensive vision which, within the development of the war of subversion and of nuclear deterrence, it ensures to the psychological aspect a centre-stage position. A definition coined in 1963 in the United States, which belongs to the same line of thought, sees strategy as a "science or art of employing the economic, psychologic and military means in the most suitable manner for attaining the political goals, increasing the possibilities of success and diminishing the risks of defeat".

The concept just outlined is clearly expressed in the work "The Great Strategy of the Roman Empire" by Edward Luttwak. In Luttwak's words "only starting from 1945, has the sprouting of new techniques of mass destruction invalidated the fundamental assumptions of the post-Napoleon, Clausewitzian conceptions of great strategy".

Like the Romans, today we are not confronted by the prospect of a decisive conflict, because the escalation has produced a lasting, absurd condition of extremely risky stability, but by a permanent, though limited, state of war. Like the Romans we must protect an advanced society from a number of different threats and, above all, considering the nature of modern weapons, we must restrict their use and exploit instead their political potential.

The revolutionary implications of these fundamental changes have been only

confusedly perceived.

Nevertheless it must be desumed that, "paradoxically", the revolutionary transformation of the nature of modern warfare has managed to approach very much the strategic thought of the Romans to our own.

The in-depth study of the concept of strategy and the determination of its various facets lead, through logical derivations, to the organization of command at the highest levels.

In fact, a general strategy must, first of all, aim at harmonizing the various individual strategies so that all concur in producing an effective unity of efforts. Among the various strategies, the military ones (those of the three Services) assume a predominant importance in case of conflict, but this, of course, never excludes the also essential functions of the other strategies (economic, industrial, psychological, etc.).

No wonder therefore that a widespread and largely shared opinion should contend that the political management of a conflict should pertain exclusively to the Government, while the conduct of operations should be under the responsibility of the military authorities.

But such a precise line of demarcation, albeit supported by convincing elements, is usually opposed by the democratic governments, which, in practice, prefer to have in their hands both the responsibility of the general policy and that of managing the conflicts.

That conception was concretely and effectively expressed by the British War Cabinet during the Second World War. This peculiar body had the task of defining the objectives of the War and dividing the said objectives in successive stages and goals.

Winston Churchill, as Head of the Government, accomplished within the War Cabinet that unification of efforts which must not fail when the future of a nation is at stake.

The political and military decisions where unified with

the participation in the Cabinet of the most representative political personalities, the Chiefs of Staff (members – in their turn – of the Council of the Chiefs of Staff) and even the leaders of the political parties.

In the War Cabinet's "system" also other organizations were involved, and were requested to cooperate on a case-by-case basis, for routine problems or for questions of particular moment. These were:

- National Defence Committee, for the organization and administration of the Armed Forces; it met once a week, and its members were the Ministers of the Armed Forces and other members of the Government;

- National Defence Board, for major problems, which held ad hoc meetings, and included the Prime Minister, two members of the War Cabinet, the Ministers for the three Services and the Chiefs of Staff, who had consultive functions;

- Council of the Chiefs of Staff, which controlled the Armed Forces and supervised the conduct of the war on the strategic plane and the operations on the tactical plane.

The British solution of entrusting the elaboration of the operational plans to the Chiefs of Staff, who were charged with the organization of the forces and the relevant logistic support, had the merit of ensuring that those plans had the guarantee of realism.

In our epoch, marked by the "nuclear" and by "subversion", we must perhaps find a different solution. In fact, there is an increasing necessity to place, next to the military strategists, on one side those responsible for internal security and, on the other, experts able to assess the national scientific and technical capabilities, comparing them with those of the potential adversary.

With the advent of the nuclear factor and with the diffusion of deterrence, we have in fact come to live in a world where the opposing parties, in

COMPAGNIE GARDES REALI DEL PALAZZO ED ALABARDIERI GUARDE DEL PALAZZO IN SARDEGNA
(Armata Sarda)



1579	1605	1713	1735-44	1719-44	1775	1816	1822	1832	1844
(Em. Filiberto-Carlo Emanuele I.) (Archibugieri Guardia)	(Vittorio Amedeo II.)	(Carlo Emanuele III.) (Archibugieri della Porta)	(Vitt. Amedeo II.-Carlo Em. III.) (Alabardieri Sardi)	(Vittorio Amedeo III.) (Archibugieri Guardia della Porta)	(Vittorio Emanuele.) (Alabardieri Guardia di Veste)	(Carlo Felice.) (Guardie del R. Palazzo)	(Carlo Alberto.) (Comp. Guardia R. del Palazzo)	(Carlo Alberto.)	(Carlo Alberto.)

order to avoid a reciprocal holocaust, tend to protract the feinting game indefinitely. The decision is no more to be found in active combat, but rather in the obscure and laborious preparatory stage.

In other words, a new form of strategy has come into being, a sort of "genetic" strategy, which consists in exploiting and employing the technical and scientific resources of a nation in order to surpass, or at least match, the accomplishments of the adversary.

This is a difficult art, because the limitation of resources often imposes difficult choices and conscious and unavoidable renunciations.

A difficult art, also because the potential of "experts" does not always succeed in producing "on request" and within the desired time, what is wanted of them.

As we have said, the concentration in the hands of

the Executive not only of the political, but also of the military control of the war, is the prevailing trend in the democratic countries.

But in the conduct of war, a performance in terms of military "professionalism" is required. In practice, this leads to assign the Major Commands the tasks and means necessary to implement the decisions taken by the supreme political leadership of the conflict.

To this end, the Supreme Command, having ensured its advice to the Government, devises the operational plans and – by delegation of the political authority – exerts its powers of command and control on the various operational theatres and on the specialized Commands.

The arguments advanced here permit to form a relatively comprehensive opinion about the political and/or military responsibility as regards the

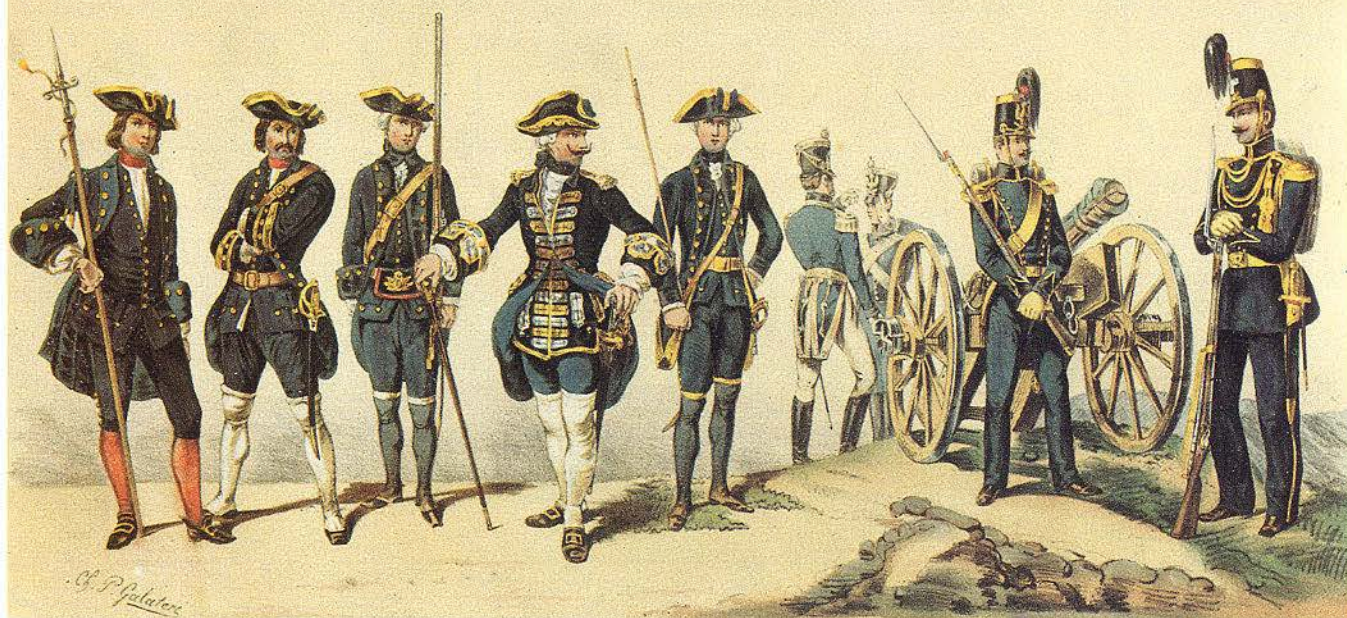
management of crises and the conduct of a possible conflict. Nevertheless a more precise reference to the Italian situation seems at this moment quite appropriate and useful, considering that the problem was recently brought to the attention of public opinion.

The Italian Constitution, at art. 78, states: "the Chambers decide the state of war and confer the necessary power on the Government".

The drafting of this article reached its final formulation only after a heated debate within the Committee (1).

An agreement was reached when Mr. Ruini, Chairman of the Committee for the Constitution, sharing the opinion of those affirming the necessity to consider that wars were not declared anymore, indeed they exploded without forewarning, stated that although the state of war was to be managed by the Executive, Parliament had

CORPO REALE D'ARTIGLIERIA (di Linea)
(Armata Sarda)



1695-96.	1753.	1758.	(1758/1775.	1786	1816	1822	1832.	1845
Vittorio Amedeo II. Corpo Militare d'Artiglieria	Carlo Emanuele III. Battaglione d'Artiglieria	Carlo Emanuele III. Reggimento d'Artiglieria	Vittorio Amedeo III. Corpo Reale d'Artiglieria Regg. d'Artig. di Battaglioni (Ufficiale)	Vittorio Amedeo III. Brigade d'Artiglieria	Vittorio Emanuele Corpo d'Artiglieria Reggimento Reale (Ufficiale)	Carlo Felice Corpo R. d'Artiglieria Brigata di Linea	Carlo Alberto 1.º Regg. d'Artiglieria con Compagnie di Piazza (1835) Brigate di Piazza	Carlo Alberto ... Brigade di Piazza

the duty to intervene as soon as possible. Proceeding from this conception, Ruini concluded: "We are going to have these stages: immediate defence with government actions; decision of the state of war by Parliament; formal declaration of war, which pertains to the Head of the State (ref. 9th Comma, art. 87). Parliament will then have a further task: to give the necessary powers to the Government.

The already mentioned 9th Comma of art. 87 of the Constitution states that the President of the Republic "has the command of the Armed Forces, presides over the Supreme Council of Defence constituted according to the law, declares the state of war decided by the Chambers". What concerns our survey is the part concerning the command of the Armed Forces.

A lot has been written on this subject. Among others, there are two works worth mentioning, owing to the modern and realistic approach to the problem: "The Organization of Defence" by Mario Ristori and "Institutes of Military Law" by Angelo Longo.

In the first of the two volumes, the author contends that the function of the President of the Republic as Commander of the Armed Forces must be related to other constitutional norms, such as:

- Art. 89, which states: "No act of the President of the Republic is valid if it is not countersigned by the proposing ministers, who assume responsibility for it";
- Art. 90, according to which the President of the Republic is not responsible for the acts done in performing his functions, except for high treason or for

acting against the constitution;
• Art. 95, which states: "The Prime Minister directs the general policy of the Government and is responsible for it".

As regards how, in practice, the President of the Republic was to exercise the command of the Armed Forces, there was much discussion within the Constitution Committee of the Constituent Assembly.

Two members, Terracini and La Rocca, proposed a formula according to which the President of the Republic was to have the Command of the Armed Forces and, in wartime, was to exercise it through the military leaders appointed by Parliament. In this regard the Russian and Yugoslav examples were also considered, but the proposal was rejected. The discussion on this subject, taken up again by the Assembly, took the form

ALCUNI CORPI DI FANTERIA SOPPRESSI (Armata Sarda)



1661-64. (Monferrato) (de Condray)
1744 (Micheletti Sardi)
(1672)-1745. (Saluzzo) (gia Lullin Bagnasco-Masina)
1774 (Legione dei Campanini) (poi Granatieri Reali)
(1703)-1706. (Alessandria) (Legione Truppe leggere) (poi DePortes) (poi Cacciatori) (1786)
1781 (Genova)
1815-20. (Cacciatori d'Assia) (Cacciatori a Nizza)
1825 (Cacciatori a Regina)
1820 (Cacciatori d. Savoia) (poi Estero in Sardegna)
1825 (1799)-1825.

of several statements and proposals.

Mr. Azzi suggested the following formulation: "The President of the Republic has the command of the Armed Forces and exercises it through the Ministry of Defence in peacetime, and in wartime through the Defence Chief of Staff".

Also this proposal, which gathered a good number of assents and even today seems to have a certain logical value, was rejected. As a matter of fact, it was said that - while it was quite clear that in peacetime the exercise of command, pertaining to the President of the Republic, had to be carried out under the responsibility of the Government and, in particular, of the Minister of Defence, in time of war the question had to be regulated according to the

solution given by the law, but always in keeping with the identical principle of non-responsibility of the President.

In the already mentioned work by Longo "Institutes of Military Law", the subject, handled with an ample and retrospective vision, is summed up recalling that "up until the end of the XIX Century the royal prerogative of command of the Armed Forces" - defined by Pierandrei (2) as "the share of those powers which are historically in the hands of a monarch and have not been modified, abrogated or regulated by formal laws" - was deemed to include an actual power to control and to guide. Afterwards, after many contrasts, the prerogative took the shape of a real power to influence and participate in the formation of the defensive trend, excluding

the actual command. During the Fascist period it had a completely formal value, since the powers of setting the political course and the deployment of the Armed Forces, as well at their direction, were in the hands of the Head of the Government. In September 1943, the King took temporarily the actual command of the Armed Forces, but this was based more on principles of necessity than on constitutional rules.

A prevailing trend of thought and doctrine excludes that the presidential command entails powers and attributions of a technical-military character.

V. Bachelet, in his work "Military doctrine and the State Juridical System", wrote that the presidential command is a merely formal, or better symbolic, attribution. Predieri, in "Defence and the Armed Forces"

BRIGATA LA REGINA (Armata Sarda)



1734.

(Carlo Emanuele III.)

(Armata Sarda - Reg. La Regina)

1756.

(Vittorio Amedeo III.)

1789.

(Vittorio Amedeo III.)

1814.

(Vittorio Emanuele.)

1821.

(Carlo Felice.)

(Brigata La Regina.)

1839.

(Carlo Alberto.)

1843.

(Carlo Alberto.)

(Brigata La Regina.)

maintains that "the operations will always be directed by the Supreme Commander or Chief of Staff".

In reality, the President of the Republic represents the national unity and the bodies entrusted with external defence and internal order – the Armed Forces and the Judiciary – rightly refer to him (10th Comma, art. 87). According to Motzo, the joint responsibility of the President of the Republic and the Government for the activities of high command should also guarantee that the Armed Forces do not get involved in politics.

From this point of view, one can also desume that the power to command the Armed Forces does not place the President of the Republic at the top of the military hierarchy. As a matter of fact, the positive law does not include any norm

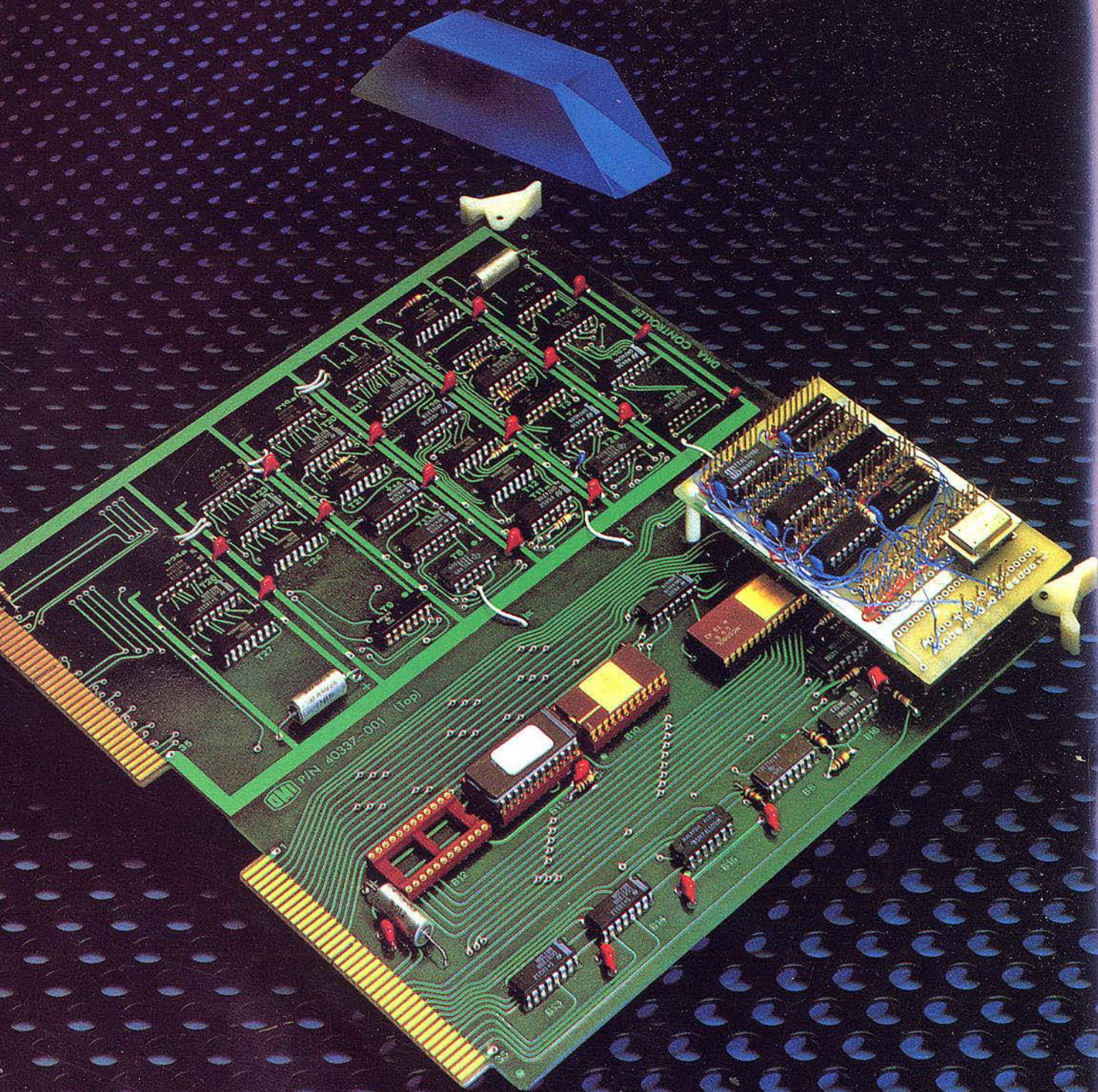
that suggests a possible insertion of the Head of the State in the Organization of the Armed Forces. In substance, the presidential function of command must not be understood as the implementation of initiatives substituting those of the constitutional bodies, but as a necessary cooperation with the government for what concerns the organization and efficiency of the Armed Forces. Moreover, it must be interpreted as a verification and an incentive for Parliament and Government to ensure that the essence and constance of the government action are in keeping with the interests of defence in relation to the situation, both internal and external. The President's function of command of the Armed Forces must moreover be seen in the framework of the Atlantic Treaty and NATO.

The NATO organization, in fact, entails limitations in the technical-military activities of the Italian authorities and, particularly, it interferes between the functions of the Supreme Allied Command in Europe and those of the Defence Chief of Staff in peacetime. In case of conflict the same interferences would arise with the National Supreme Commander (Defence Chief of Staff?).

The Bill (no. 1489) regarding the reorganization of the central military structure of Defence, recently submitted by the Government, contains a more precise attribution of prerogatives and responsibilities, and should moreover permit to enhance the position of hierarchic pre-eminence, in addition to the functional one, of the Defence Chief of Staff over the Service Chiefs, emphasizing the prin-

AOSTA CAVALLERIA

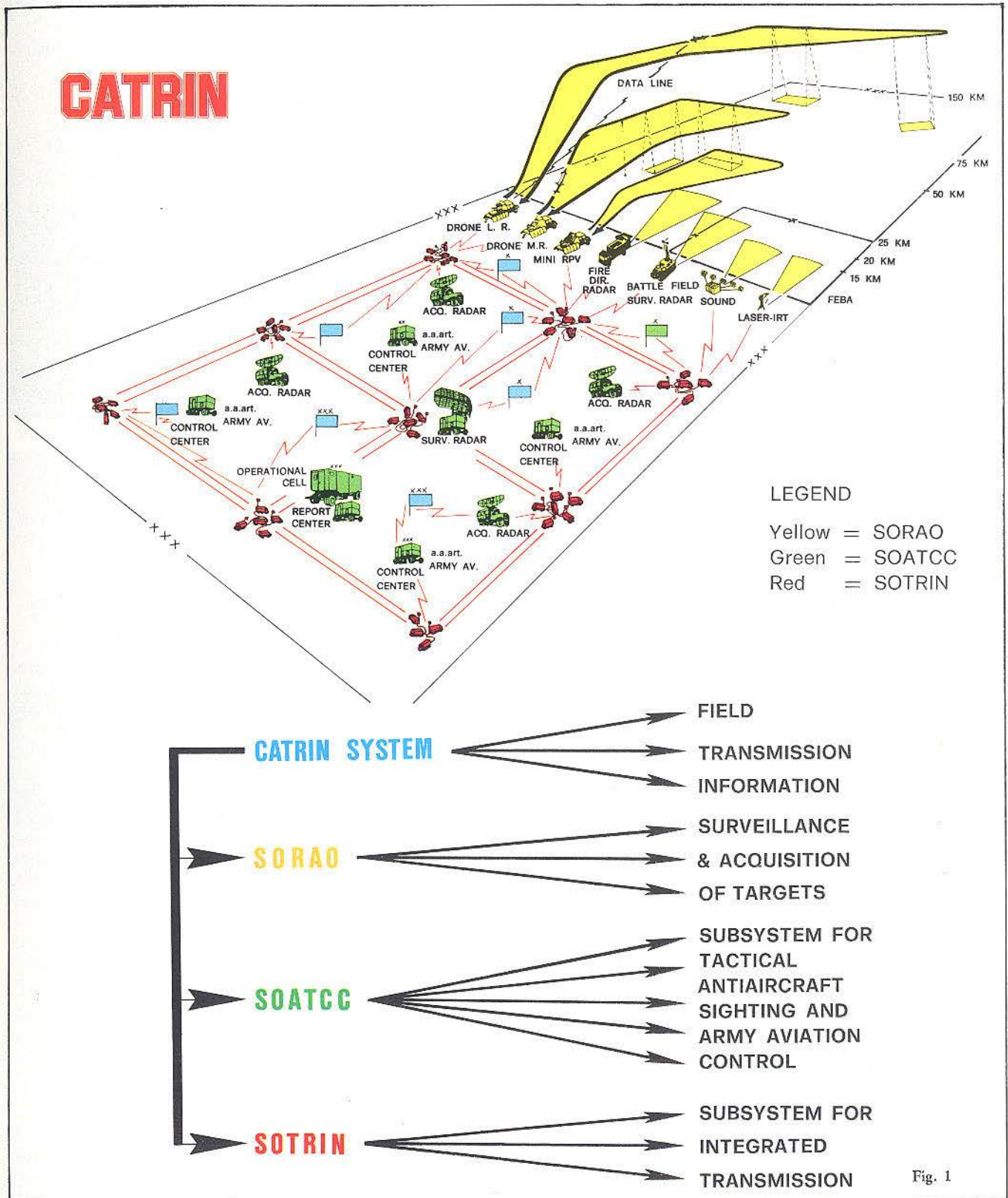
THE DEVELOPMENT OF CATRIN



When in 1984, the Army General Staff introduced the **CATRIN System (Transmission and Information Field System)**, (fig. 1) to Italy's industrial world, the ideas about its technical

and operational structure were certainly well-rooted, so that it was possible to envision it (1) within the wider picture of **C³I (Command, Control, Communications and Information)**.

A picture which by many parties, particularly within the Alliance, was pointed out as the indispensable background, which should be adapted to the modern technological capabilities for



SOME OF CATRIN'S MAIN IMPACTS ON THE OPERATIONAL FIELD

- Computerization of operational Command Posts
- Interface with Weapon Systems
- Training
- Logistics
- Procedures of employment
- Survivability

Fig. 2

an updated conduct of military operations.

But those were only ideas, although, on that occasion, it was possible to illustrate the Service's outlook vis-à-vis the ways of modernization in the specific field; to establish the general Military Requirements for CATRIN, to plan a **structure** within the Defence administration for activating the system and last (a very important element), to ask the Italian industry of this sector to form **operational groups** (1) with a "very agile, integrated structure at the top, capable of solving all interface problems and holding a global dialogue" with the Defence administration.

Today, two years later, it can be said that Industry, albeit after some not-negligible toil, has accepted the invitation, is side by side with Defence, and has outlined a **detailed plan** for CATRIN, which has obtained Defence's approval.

In substance, the Italian industry has given the first features of **concreteness** to the specific ideas of the Army General Staff.

An essential part of the C³I complex is thus well under way.

The present project will soon be followed by the construction of the individual units, which will complete the system in approximately six years time.

Undoubtedly there are all the prerequisites for success.

The development of CATRIN bears a large number of connected initiatives.

In fact – as it was evidenced during the recent presentation of the new Army equipment in Sardinia – CATRIN does not only mean construction of a new weapon system, but also a change of doctrines, new methods for Command and Control activities, rationalization, new mentalities, updated training for the Cadres.

The influences on the operational and technical field are so great that they entail a generalized renovation of the entire instrument of the Service.

Awareness about these influences implicates a careful

CATRIN does not only mean construction of a new weapon system, but also a change of doctrines, new methods for Command and Control activities, rationalization, new mentalities, updated training for the Cadres.

study in order to detect, as soon as possible, all the elements necessary for developing an armonious and balanced tool of land defence.

This thorough examination, which requires diligence and time, is being carried out by the Army General Staff. We just wish to point out some of the main reflections on the operational and technical fields, dwelling a little longer on the aspects that deserve higher priority.

IMPACTS ON THE OPERATIONAL FIELD (fig. 2)

The first impact represents in fact the foremost requirement: the harmonious insertion of the CATRIN System between the operational Command Posts and the weapon systems. Moreover, the following impacts deserve to be mentioned:

- adaptation of training;
- updating of logistics;
- evolution of the methods of employment;
- survivability.

For the armonious insertion between the Command Posts and the various weapon systems,

FLows BETWEEN OPERATIONAL COMMAND POSTS AND "CATRIN,"

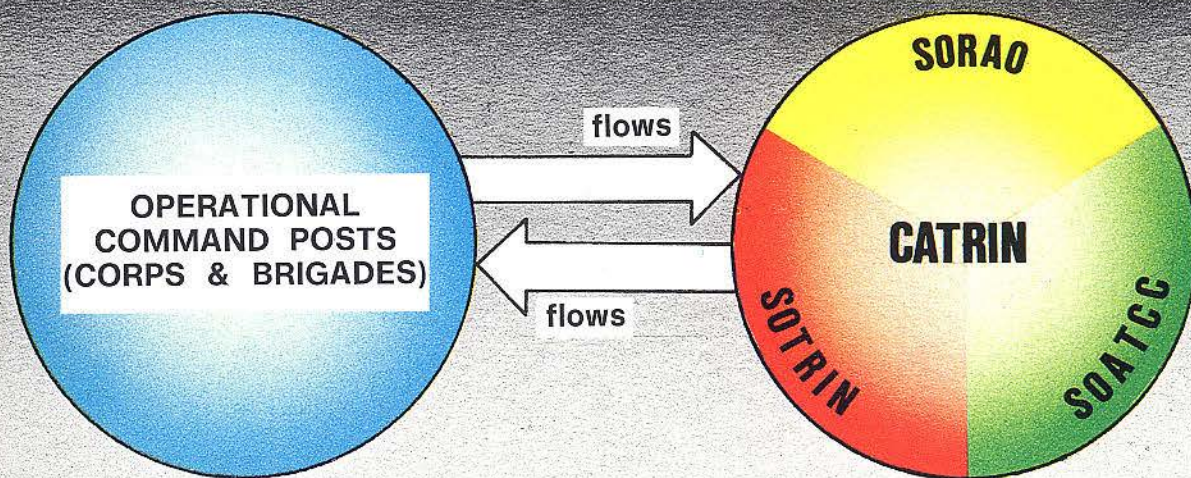


Fig. 3



an updated structure, in terms of **computerization**, is required (fig. 3), to enable them to receive the remarkable information inflow coming from all users and from all CATRIN sensors, in order to avoid dangerous **undecipherable backlogs**.

And not only that. The Command Posts' structure must be such as to permit them to be in their turn **producers** and **introducers** of data (information and orders) into the CATRIN system, without laborious preliminary operations.

CATRIN is already pre-arranged to receive, transfer and sort out compacted, targeted and selected data: in short, it is provided with a **specific personalization**.

Therefore the Operational Command Posts must be up to CATRIN's performance, in order to produce data packages suitable for optimal processing by the system as well as receive, decode and utilize the data following from the system itself.

All this is of course part of the harmonious picture C³I we refer to.

And here we see the need to conceive also a new

A SYSTEM FOR THE COMPUTERIZATION OF THE OPERATIONAL COMMAND POSTS

SIACCON=

AUTOMATED

COMMAND &

CONTROL

SYSTEM

Fig. 4

computerized system for managing the Command and Control activities, which at present are still conducted by the Major Unit's General Staffs in the traditional way.

There are already ideas for this type of system, and they are taking shape and clarity, to be transformed into Military Requirements, employable in view of a study for the definition of a detailed system and, subsequently, for the development of prototypes.

The system, which has been named **SIACCON** (fig. 4), an acronym of the term "Automated command and Control System" in Italian, will have to be experimented together with CATRIN and timed compatibly within that comprehensive C³I vision which we have repeatedly mentioned (fig. 5).

In relation to the structural configuration of such a system, it should be premised that for an Operational Command Post of a Major Unit (Army Corps or Brigade), the data flowing to CATRIN must necessarily reach a centre capable of analyzing and sorting out information.

From this stems a new

unit, **CASI** (Centre of Analysis and Selection of Information) where a series of specialized **functional cells** must carry out a mostly automated filtering process of the incoming data, preventing these data from reaching the organs presiding over the formation of the Commander's decision in a raw state and in exorbitant numbers as compared with the actual necessities.

It is also necessary that the data **cleaned** by CASI pass through another element which should act as a unitary concentrator and storage of all information: a Mixing Centre, where all the data **cleaned** by the functional cells and the various relevant elements are gathered, and from which one can obtain both the actual situation, with real-time updating, and the extrapolations concerning the enemy's possible action (**PAN** = Possibili Azioni del Nemico) and one's own possible lines of action (**LAP** = Linee d'Azione Possibili) to be subjected to the Commander's choice and decision.

The Commander's determination and decisions must there-

fore concretize in the distribution of orders and situations which flow in a direction contrary to that described above.

The data flow should go from the decisional bodies to the Functional Cells, on to the dependent Headquarters, passing through, and leaving at the Mixing Centre a trace of everything that has been done.

Here are the elements, determined in their main lines, which must be present in the SIACCON configuration for an operational Command Post (fig. 6):

- one CASI;
- one Mixing Centre (CF);
- one Decisional Centre (CD)).

As we said, the CASI must comprise a range of **specialized functional cells**, for the analysis and selection of data (i.e. for the employment of fire, engineers, communications, Army aviation, just to mention a few).

The Mixing Centre will be a constantly updated and possibly intelligent **data bank**.

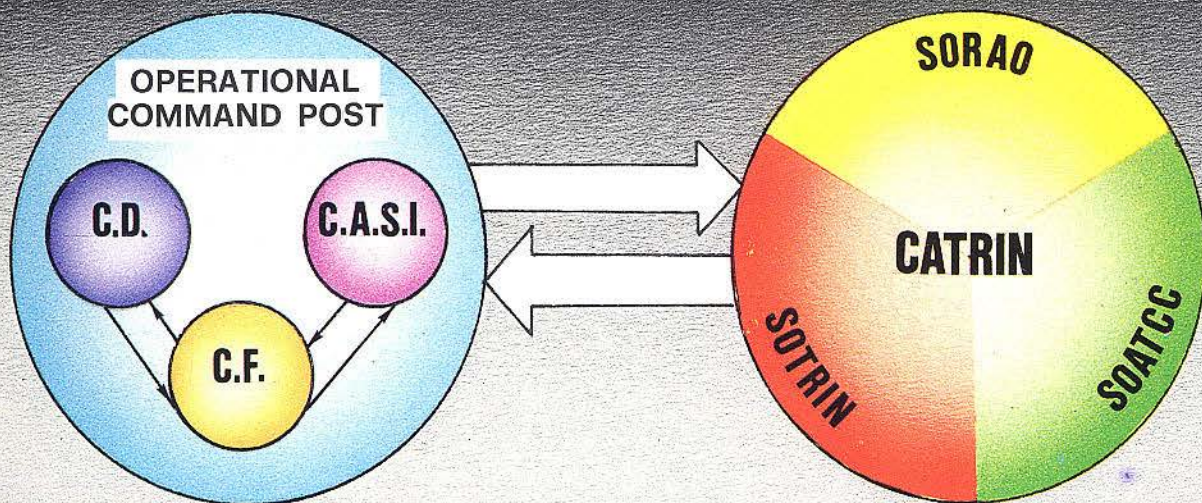
The Decisional Centre will be the place where the General Staff officers carry out their exacting task of supporting

C³I = THE SUM OF CATRIN AND SIACCON



Fig. 5

INSERTION OF “CATRIN,, IN THE OPERATIONAL COMMAND POST



CASI = Centre of Analysis and Selection of Information
 CF = Mixing Centre
 CD = Decisional Centre

Fig. 6

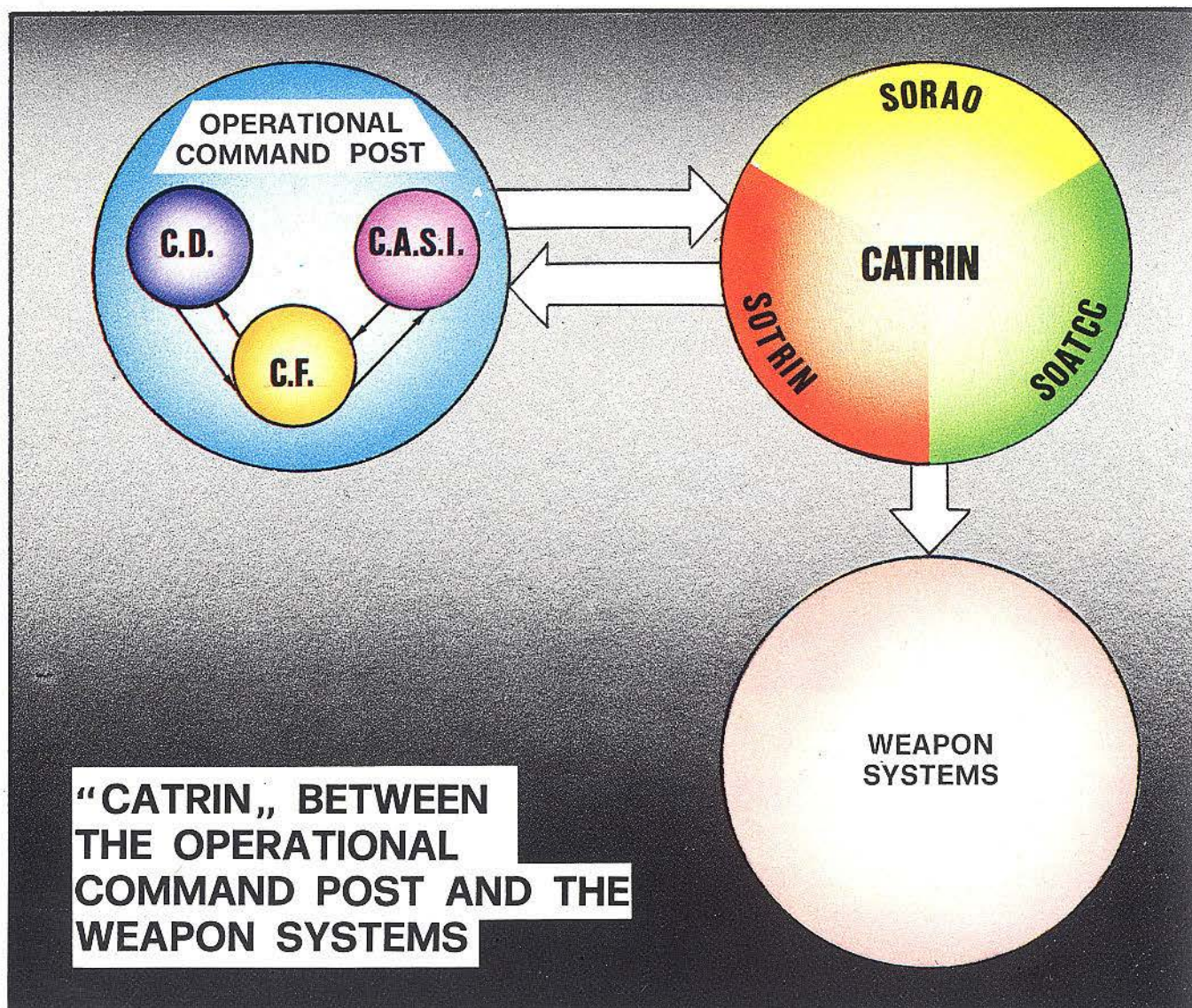


Fig. 7

the Commander's decisions, employing **graphically** visualized operational situations related to the updates sent in by the Mixing Centre issuing, also graphically if possible, the ensuing orders transmitted by the Commander himself.

Only in this way can the employment of CATRIN be considered profitable and optimal. CATRIN and SIACCON will constitute for the Italian Army an **indispensable** symbiosis, but, as we will see later on, an "insufficient" one in view of a modern operational effectiveness.

The deficiencies of one of the two systems will affect the performance of both.

Up to now we have been speaking about the introduction

of CATRIN directed towards the Command Posts.

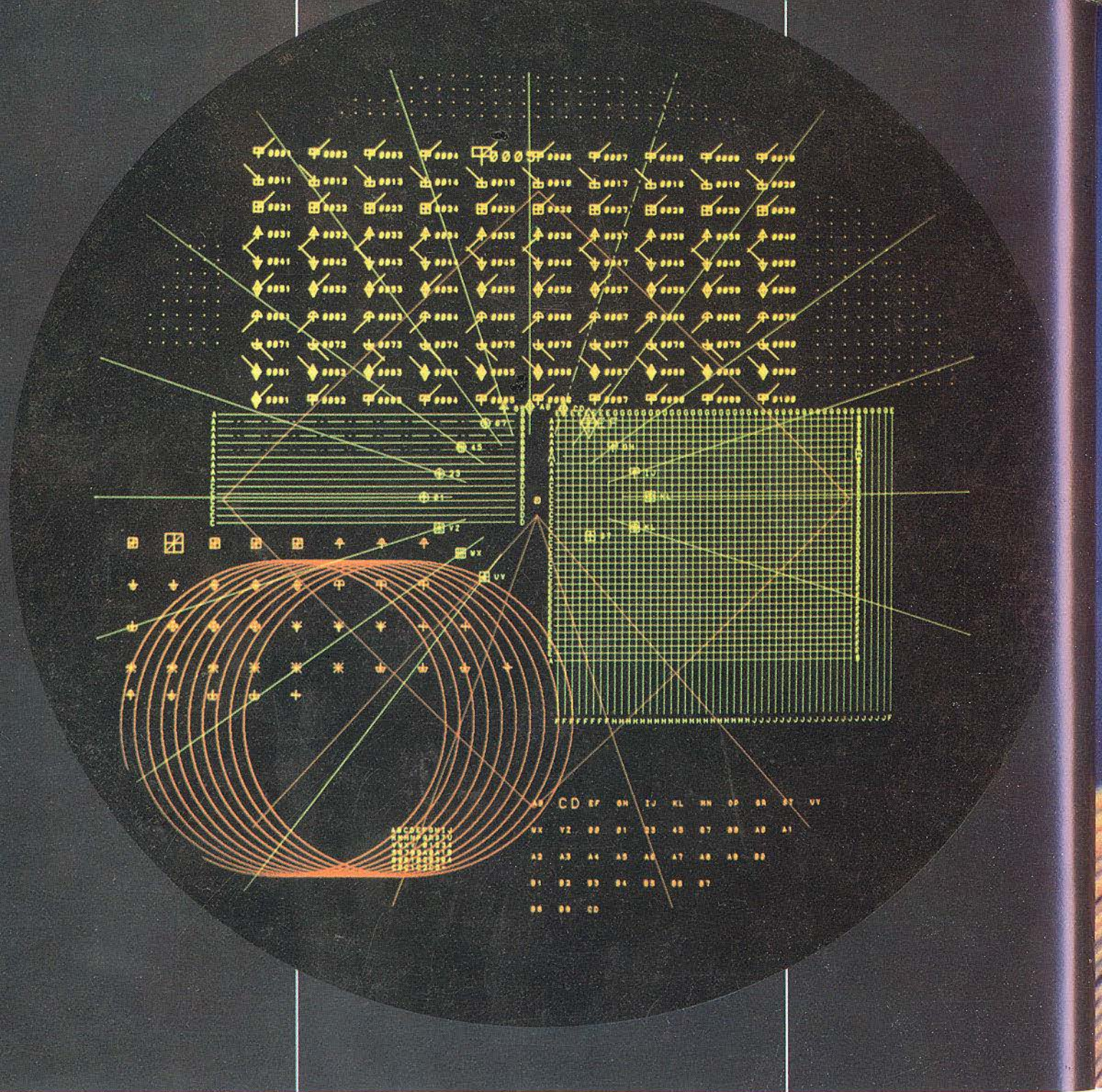
But also another side to which CATRIN is directed must be taken into consideration (fig. 7): the weapon systems (such as those employed in anti-aircraft fire reaction, land fire, Army Aviation, transmission to the units, electronic warfare; again, just to mention a few).

In relation to the structural configuration of such a system it should be premised that for an Operational Command Post of a Major Unit (Army Corps or Brigade), the data flowing to CATRIN must necessarily reach a centre capable of analyzing and sorting out information.

The realization of the CATRIN project, in fact, envisages that the weapon systems already in service be taken into account; for those developed later it will be necessary to impose precise specifications for this integration. All this must be done in compliance with the **principle of economy of forces** and maximization of operational effectiveness – as was said in what was said in Sardinia (2).

TRAINING

When speaking about the CATRIN-SIACCON **symbiosis** as an indispensable element for a modern efficiency of the operational instrument, we said



incidentally that, nevertheless, that symbiosis was not a sufficient condition.

The reason is that other influencing elements intervene, among which training is an outstanding factor. Training, understood as the creation of a new mentality, abreast of the times. Modern technologies imply new ways of thinking and acting, and this is even more true for the Armed Forces, which

Modern technologies imply new ways of thinking and acting, and this is even more true for the Armed Forces, which are called to fulfill – in the role most appropriate and adequate to the historical moment – the duty of ensuring the Security and Defence of the national interests, be they coincident or not with those of the Allies.

are called to fulfill – in the role most appropriate and adequate to the historical moment – the duty of ensuring the **Security and Defence** of the national interests, be they coincident or not with those of the Allies.

In this sector the Service has taken important initiatives for the training of both the young Cadres – starting from the Military Academy and the



NCO Schools – and the senior Cadres.

The results will not be concretely perceived before some time. Nevertheless the course has been traced: it requires a longlasting engagement, attention, a gradual reexamination of the working procedures, with wider employment of office automation in the computerized handling of the management data and, above

The road to be followed to reach concrete results has been traced: it requires a gradual reexamination of the working procedures, with wider employment of office automation in the computerized handling of the management data and, above all, automated command and control systems which should be set up at the permanent seats already in peacetime.

all, automated command and control systems which should be set up at the permanent seats of Agencies and Headquarters, which should manage them already in peacetime.

LOGISTIC

As everybody knows, logistics is another element that comes into play as regards

operational effectiveness. SIACCON and CATRIN are new systems, of recent conception, which require that the suitability of the present (even the most recent) logistic systems be verified. Certainly they entail the implementation of new methods (telesurveys, teleinterventions, redundancies and others) capable of ensuring, more markedly than in the past, the indispensable services to the forces which happened to survive even the most massive destruction, absolutely preventing the loss of still potentially operational forces – as regards fire and mobility – due to deficiencies in the C³ I System.

SURVIVABILITY

The last remarks concern the specific problem of survivability: CATRIN and SIACCON must have a high survivability, which must absolutely surpass that of any other element of the operational instrument.

A survivability which must be considered both from the physical point of view (and the qualities of these systems are such as to ensure not only the compliance with the military requirements as regards materials but also the continuity of function after a 50% destruction of the system) and the electromagnetic point of view.

Consequently, for the latter element, all the EMP (Electromagnetic Pulse, which develops during nuclear explosions) and "Tempest" aspects must be considered with special care, besides the traditional provisions concerning defence against jamming, through special modulations, and the security from tapping, through highly hermetic code systems.

THE EVOLUTION OF DOCTRINE

C³ I systems based on the wide employment of computers will certainly not affect the **principles of war**, which remain substantially unchanged. But

SOME OF THE MAIN IMPACTS OF "CATRIN," ON THE TECHNICAL/TECHNOLOGICAL FIELD

- digital modulations
- survivability techniques (EW, EMP, TEMPEST...)
- advanced coding techniques
- field telefax
- advanced techniques and technologies for the adaptation of materials to the battlefield
- new radar techniques
- evolution of RPVs and Drones
- new all-weather sensors
- evolution of phonotelemetry
- data correlation
- continuous control of the battlefield
- field computer networks

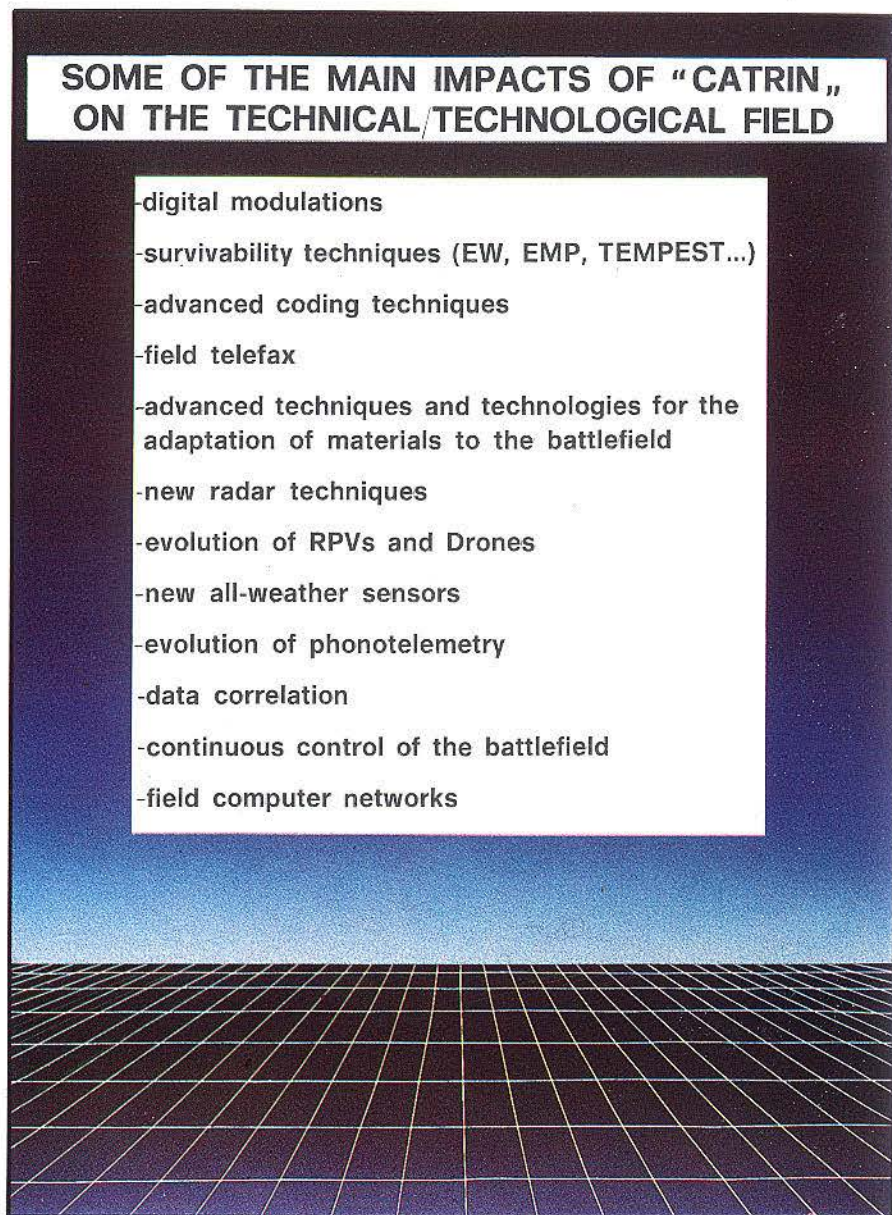


Fig. 8

they will undoubtedly influence the modes of their application, i.e. the doctrine of employment.

There will certainly be reverberations on the doctrine of employment concerning transmissions (will the Transmission Centres still be necessary?

Or will the Command Posts be able to have direct access to the integrated networks? How and to what extent will the alphanumeric type of message survive? To what extent will teletransmitted graphics replace the prolix SITREP, INTSUM and so on?).

Certainly also the doctrine of land artillery will change (will all the procedures of objective acquisition and fire adjustment survive the comparison with CATRIN/SORAO?); there will also be reflections on the doctrine of antiaircraft artillery and Army Aviation (linked today to procedures that will be positively influenced by the

As everybody knows, logistics is another element that comes into play as regards operational effectiveness. SIACCON and CATRIN are new systems, of recent conception, which require that the suitability of the present (even the most recent) logistic systems be verified.

advantage, provided by CATRIN/SOATCC, to have a timely knowledge of the updated situation of the sky above the battle area).

The introduction of systems such as CATRIN and SIACCON are likely to influence also the employment of Engineers and combat Units, which will be in a position to know more in advance and in depth the situation of friend and foe as compared with today's possibilities.

CATRIN'S TECHNICAL AND TECHNOLOGICAL SIGNIFICANCE (fig. 8)

The technical/technological significance of CATRIN could be better evidenced by the firms of the Consortium which are interested in the development of the system.

Nevertheless, here we can at least point out the most significant reflections.

From this point of view, CATRIN means:

- studying in depth the numeric modulation transmission techniques (especially delta);
- engaging in new sectors of survivability in electronic warfare environments;
- developing techniques for the compliance with "Tempest" procedures;
- gaining a deeper knowledge of the emerging coding capabilities;
- engaging in long-distance image transmission (telefax) in a field environment;
- enhancing the techniques for adaptation of materials to the battlefield;
- developing new capabilities in the radar sector (also from high platforms);
- advancing in the RPV and Drone sectors;
- advancing in the night and all-weather sensors (IRT, laser, millimetric waves);
- improving in phonotelemetry;
- making progress in data correlation;
- engaging in the sector of continuous control and guide

of the Army Aviation aircraft in critical situations;

- solving the problem of the techniques for controlling the friendly skies in the Army Corps' Zone in order to detect the threat, but also to be able to employ our own means in all security;
- tackling and solving the difficult problem of the integrations necessary for setting up computer networks up to the highest levels.

CONCLUSIONS

What we have said has made clear that CATRIN's takeoff marks a deep operational and technological evolution within the Army (and not only the Army) and will certainly bring about a totally renovated vision of the land Service.

The Army trends towards the employment of the most advanced technologies, towards the system contributions which are indispensable to a defensive instrument abreast of the times.

The Army is therefore more than ever open to modern instances.

There are no obstinate and counterproductive attachments to tradition which could only have a detrimental effect. Tradition is held in due esteem where it serves to consolidate a precious spiritual inheritance, as appropriate nourishment of the spirit of a Service. But tradition is

In short, the development of CATRIN must be seen as a precondition for the launching of the whole complex C³I, sphere which is currently drawing a lot of attention, and not only among the military.

Nevertheless such a system cannot be utilized only for emergencies or during periodic training activities of the Command Posts. A continuous training is required of the Commanders and Staffs, who must make themselves familiar with the new operational and managerial techniques.

set aside (and it has been for years) where it is the expression of ideas which have become obsolete.

Today the Italian Army's approach is expressed in terms of maximum incentivitation and utilization of what is new, maximum openness to progress as regards the defensive instrument and contribution – for what pertains to it – to the social progress in general.

Of course some more time must elapse before the fruits of these new attitudes and ideas can be fully appreciated.

In short, the development of CATRIN must be seen as a precondition for the launching of the whole complex C³I, sphere which is currently drawing a lot of attention, and not only among the military.

Nevertheless such a system cannot be utilized only for emergencies or during periodic training activities of the Command Posts. A continuous training is required of the Commanders and Staff, who must make themselves familiar with the new operational and managerial techniques. The command organization, at the centre and at the various locations, must gradually adjust to the forthcoming structures, in order to take full advantage of the system's services (cost-effectiveness), to focus its attention on the fundamental conceptual and organizational problems and to relieve the daily work from a routine which is usually alienating and dispersive.

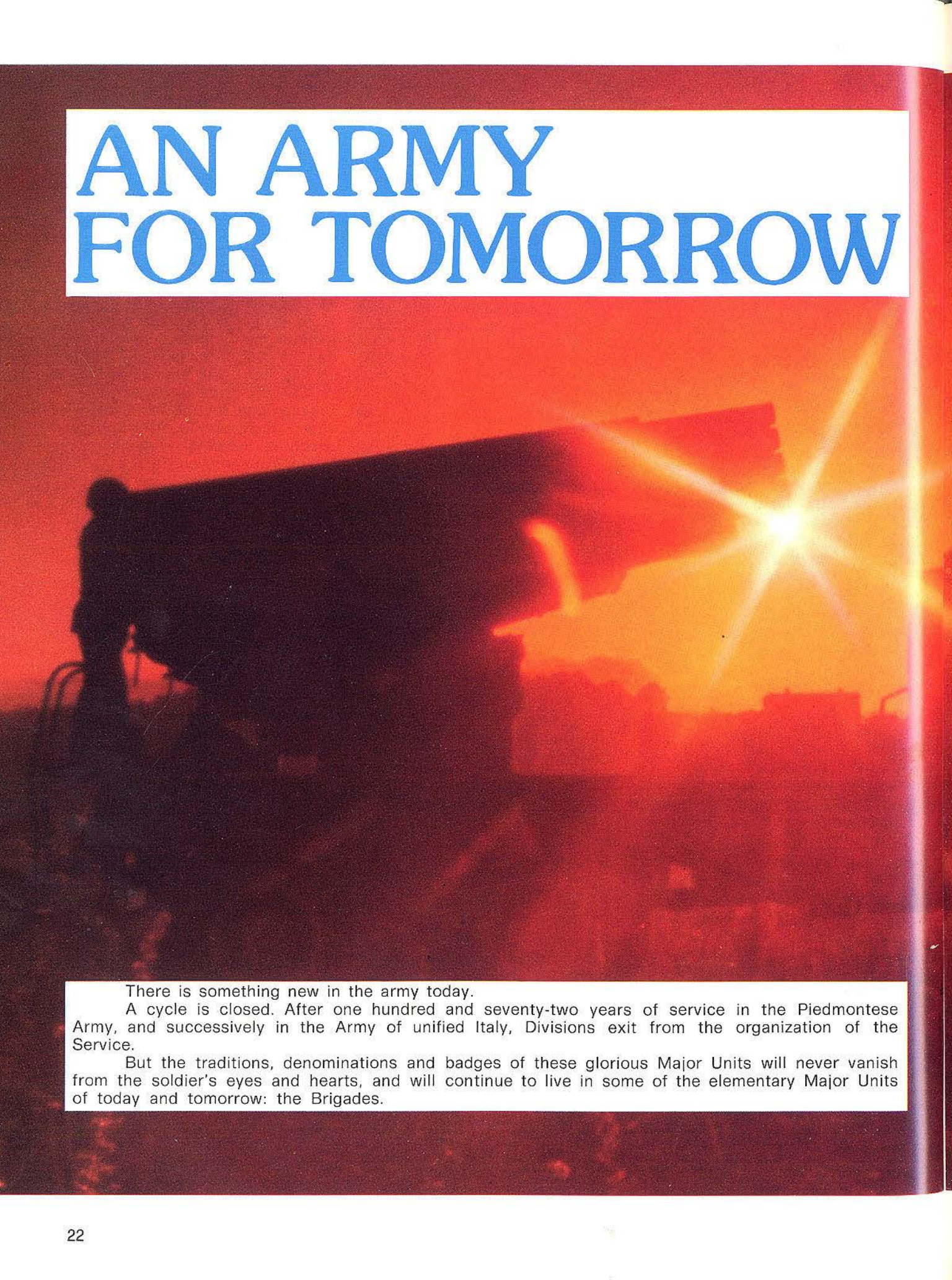
Lt. Gen. Antonio Viesti

THE DEVELOPMENT OF CATRIN

NOTES

- (1) "Rivista Militare", no. 2/85. Article by Gen. Antonio Viesti.
- (2) Introduction to Gen. Viesti's visit to Perdasdefogu on June 19, 1986.

AN ARMY FOR TOMORROW



There is something new in the army today.

A cycle is closed. After one hundred and seventy-two years of service in the Piedmontese Army, and successively in the Army of unified Italy, Divisions exit from the organization of the Service.

But the traditions, denominations and badges of these glorious Major Units will never vanish from the soldier's eyes and hearts, and will continue to live in some of the elementary Major Units of today and tomorrow: the Brigades.

Evolution is a natural phenomenon and normally we do not stop to think that the changes concerning man inevitably reflect on the context in which he lives, and vice versa.

In general, we only take notice a posteriori of the changes which have occurred gradually and in an almost imperceptible manner.

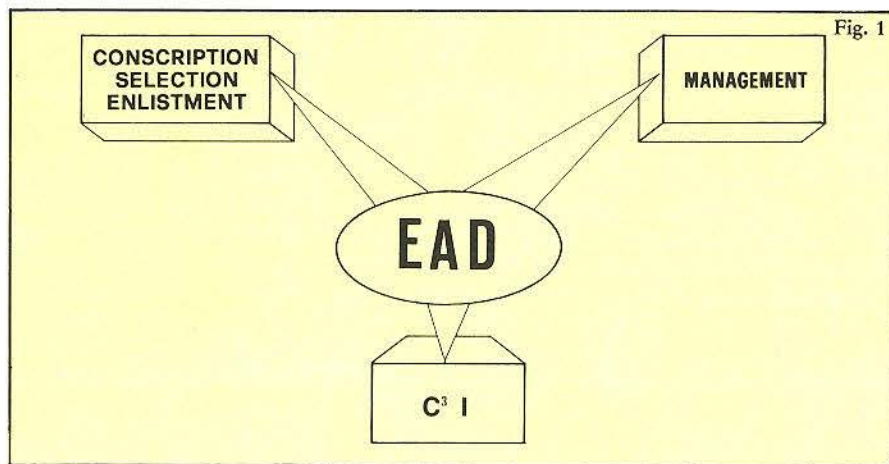
Therefore it should not come as a surprise that when the rhythm of evolution quickens, and upsets – or we fear it might upset – the environment where we operate, giving shape to blurred scenarios and uncertain times, our instinctive reaction is to refuse the new and go back to the habitual.

In countries where the institutions are founded on the principles of democracy, the evolution of the Armed Forces is influenced by various political, economic, social, scientific, technical and psychological factors. Therefore, it is difficult to define real needs and actual possibilities, because each of these two categories presents ever changing composite aspects, which often interact according to models difficult to define, in most cases impossible to quantify, and not always consistent with logic and rational schemes.

The development of a new weapon system can engage General Staffs and industries for fifteen or twenty years from the moment it is deemed necessary until it becomes operationally available; and probably with characteristics not fully in line with the requirements. The Officers attending the military schools today will become Battalion Commanders at the beginning of the new century, when the role or the configuration of these units will probably have undergone radical changes.

The challenge posed by changes is nevertheless an integral part of our daily life and must be accepted in order to control it and reduce the margins of uncertainty. Certainly we need a correct amount of rationality, experience and phantasy to make the best choice among the many possible lines of conduct, whose development becomes more and more undetermined and difficult to foresee. If correctly planned, changes can be a manifestation of vitality, prevent sclerosis and are proof that the Armed Forces are not getting ready to fight yesterday's war, as some critics maintain.

Sometimes a single new piece of equipment produces modifications that can be very deep. Currently a new automated data processing system (EAD = Elaborazione automatizzata dei dati) is showing up on the national military stage; the employment of this system,



starting from the most technologically advanced applications and high-specialization areas is expanding with increasing speed through everyday life, from routine activities to the conceptual activities at the top of the organizations. The subject has been discussed also in this magazine (1) and does not need further presentation. We only want to stress that over the next few years EAD, extending to an increasing number of sectors and hierarchical levels, will produce such modifications in the operating procedures that a real leap forward in quality will occur. EAD is therefore one of the main factors to be considered in planning the reorganization and the development of the Army (fig. 1).

Another important aspect is the progressive refinement of the "model 80" logistics, which, owing to heavy psychological and practical obstacles has had only a partial utilization and, moreover, has been employed only in commissary, transport and material services. Its development must be furthered with the adaptations suggested by experience in terms – as regards materials – of "adhesion logistics" within the Major Units and "support logistics" at the 3rd and 4th level, aiming at a more balanced reallocation of the means and executive organs, a simplification of structures and a better compactness of the functional chain.

Also within the still underestimated but fundamental

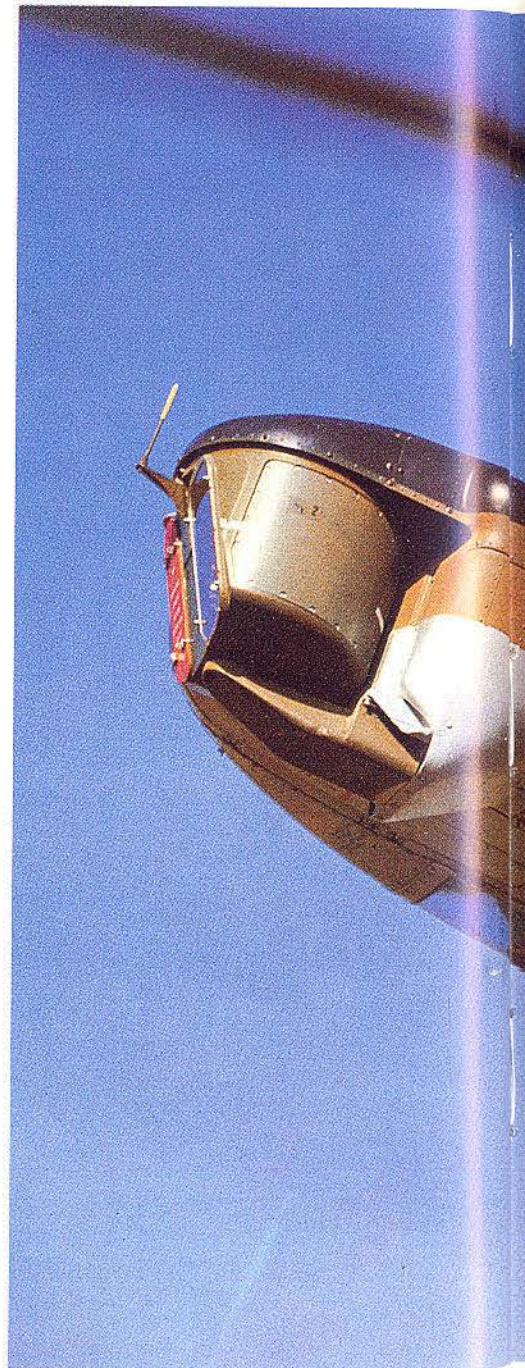
"personnel logistics" (conscription, enlistment, mobilization) an updating of procedures is becoming more and more necessary and, especially in this field, automation is destined to play a primary role.

As far as sheer organization is concerned, the process started in 1975 sanctions the definitive supremacy of the interservice command activity, unified in the General Staffs of the Major Units, vis-à-vis the "specialized" activity of the old regimental Headquarters and the Service Commands whose functions were at least equal, if not more important, to those of the General Staff. There was consequently a gradual acknowledgement of the excessive length of the operational chain of command, in which the divisional level shared the responsibilities of the complex Major Unit on one side, and those of the elementary Major Unit on the other. Squeezed between the Army Corps and the Brigade, the functional space of the Division Headquarters has been so reduced as to make evident the convenience of simplifying the system, in order to avoid interferences and overlaps of the respective scopes. The main needs, derived from the elimination of the coordination

"A 109" helicopter. The helicopter component will be particularly important in the prospective structure of the Army.

and control levels, will be met by making recourse to automated C³ I and management systems.

These three aspects (EAD, logistics and operational chain of command) are grafted on a basis characterized by a limited availability of financial resources (2), which is not expected to grow within a short time, even though the national economy shows signs of improvement. From this stems the decision taken by the Minister of Defence in 1985 –



and widely commented by the press – to help redress the country's finances by forgoing the 3% increase in real terms of the resources allotted to his department. The increase was provided for by the international commitments regarding military defence.

This decision, politically difficult within the Atlantic Alliance and in relation with the opposite bloc, can be adopted without affecting the Army's credibility provided that two

fundamental conditions are met:

- **first:** avoid to affect the "operational core" of the Army, which is already reduced to a minimum, vis-à-vis the tasks assigned to it by the models of defence;
- **second:** activate that rise in quality of the operational forces, which we were unable to attain with the 1975 restructuring, by planning the financial programmes in such a way as to privilege investments (updating and upgrading of materials,

as well as the connected activity of research and development) to the detriment of the discretionary expenses for conscript personnel and for routine operations.

This political decision has prompted a feasibility study, which has been developed quickly, with remarkable conceptual effort and with the participation of all high Commanders, General Inspectors and Chiefs of the Logistic Corps of the Army for every functional area of the Service.



THE TERRITORIAL AREA

During the last decade several important measures have been taken: 16 territorial Depots, 6 Military Hospitals and Medico-legal Centres, 63 Ammunition and Fuel Depots, 16 stockyards and 19 warehouse sections have been removed from the Army organization. Concepts and profile of a territorial model have been outlined, towards which we must direct our efforts in order to adapt to the new tasks of the Armed Forces, provided for by law 382/1978, and to harmonize with the operational component restructured in 1975, as well as with the innovations introduced by the "model 80" logistics. As a consequence, the jurisdictional areas of the Military Regions have been established according to the country's partition into administrative Regions, and the leading organs of the Military Region Services have acquired

tasks and structures in line with those of the Logistic Corps Commands, proceeding from an organization "by subject" to an organization "by function".

But the core of the problem has not been reached yet, and the system's configuration remains overproportionate as compared with the actual needs and performance. It is therefore logical that the most significant transformation in the next years should concern the territorial area. The fundamental criterion in all sectors will be to do away with the less productive or redundant organs, privileging those prospectively destined to perform primary functions in favour of the "basins of users", to be determined according to:

- functional considerations;
- "population" receiving the service, in terms of organizations or individuals
- interconnections between the various sectors.

Operational sector

A not very conspicuous intervention, which is nevertheless destined to have important repercussions, is that which will affect the territorial chain of command. The recent specification of the functions in the various sectors and the division of responsibilities between the Commanders of the Military Regions and Army Corps in the North-West and North-East Military Regions (3) is certainly a step in that direction.

The organization based, for all practical purposes, on the centralization of all functions at the Military Region Command is being gradually replaced by another which – though respectful of the functions attributed by ministerial decree to the Military Region and Garrison Commanders – will carry out a more balanced apportionment of the delegable functions, reaching the administrative Provinces, in most of which – with the graduality permitted by needs and availability of resources – a Provincial Military Command has been recently established, while up to now its constitution was envisaged only in case of emergency (fig. 2). In peacetime, this body will also perform the duties of a "Garrison Command", which hitherto have been assigned as "additional task" to various Commands and organizations.

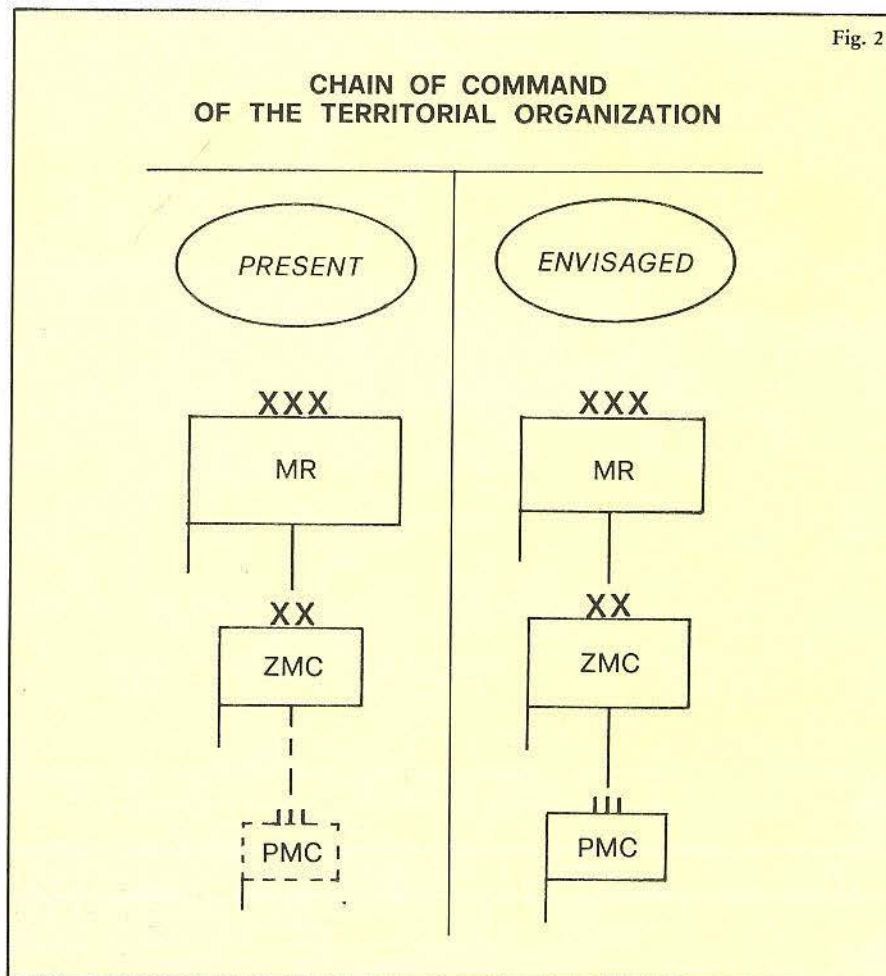
The simplification of functions will of course affect also the structure – or at least the number of personnel of the Region and Zone Military Commands.

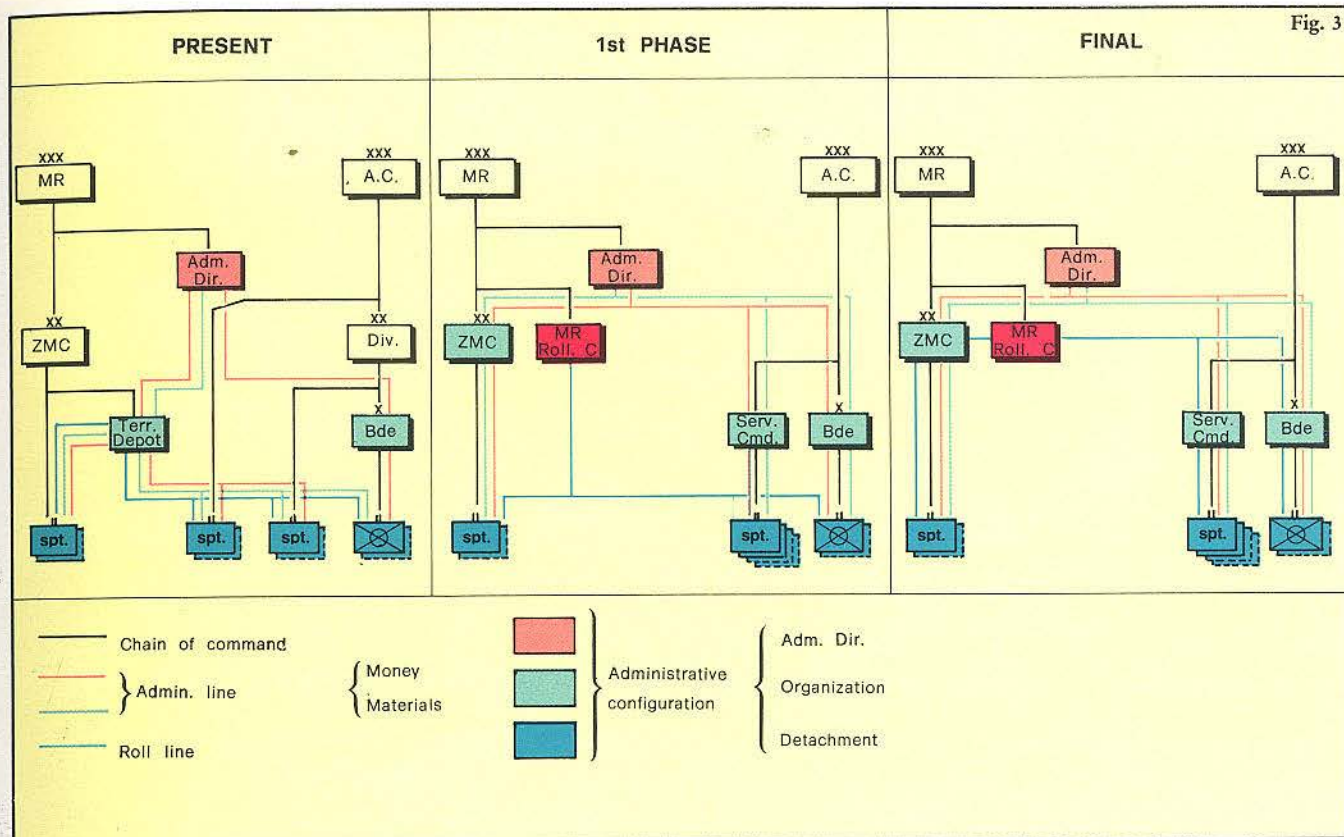
Administration and Roll Sector

This is one of the sectors which will derive the best advantages from EAD's beneficial effects, considering that the management of both money and materials, as well as the parallel recording activity, are constitutionally suitable for exploiting the possibilities of automation.

The results will be:

Fig. 2





- lighter tasks for the "administration detachments" and – though with lesser priority – for the "Organizations", so that the Commanders will only be given the responsibility of the activity connected with discretionary expenses;

- attainment of a more marked correspondence between the chain of command and the administrative line.

Next to the Pension Centres, already functioning within the Military Regions for the calculation and payment of the provisional retirement allowances (4). "Military Region Recording Centres" are beginning to operate, they are to assume the specific tasks related to this matter, previously performed by the territorial Depots. It is the first step of a process which envisages the adoption of automated working procedures, thanks to which the variations in the service record, transmitted by the Corps and loaded on tape at higher-level "Administrative Organizations", will be gathered and sanctioned by the Recording Centres.

Meanwhile some Zone Military Commands, Support Units Hqs. (former Service Units Hqs.) and some Service Commands of the Army Corps have been established as "Administrative Bodies" for managing money and materials for the lower level territorial units and for the battalions not included in a Brigade. As a consequence the territorial Depots – which had been kept alive as inheritance of the period in which the structure of the Army was based on regiments – have recently been abolished.

The ultimate structure will be completed gradually, owing to the need to introduce software and make the Record Centres and the new "Administrative Organizations" operational (fig. 3). This will occur presumably within 1987.

The logistic of materials

Wide margins susceptible to rationalization have been found where there are organs overproportionate as compared to the requirements, or which

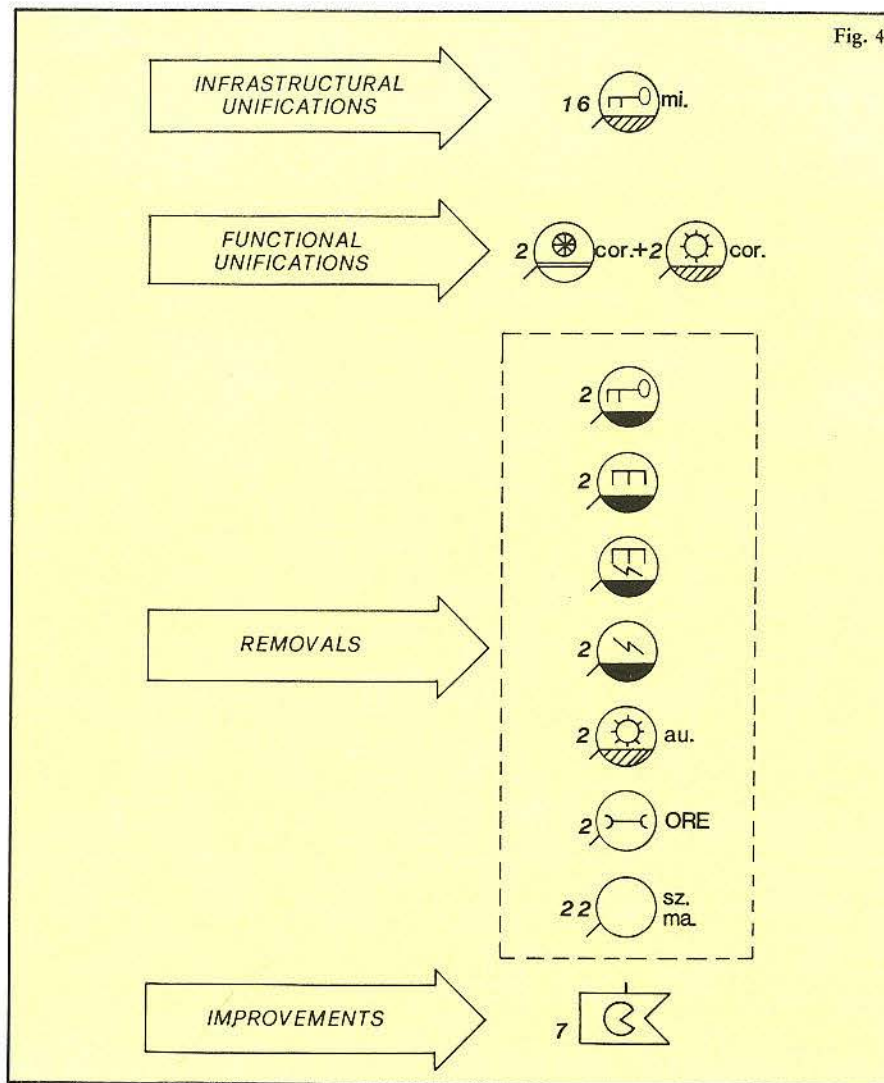
have insufficient capabilities to work autonomously, so as to be compelled to turn to private firms frequently. In some sectors, for example that of motor vehicles, there is a growing tendency toward organizational models, which permit to reduce the reparation times, especially through maintenance cycles programmed at the lowest levels and the utilization of modular elements. Therefore the intention is to:

- complete the "model 80", incorporating as much as possible the various components of the executive organs of each logistic Service, at present still sited in different locations or in the same place but in separate structures.

This goal can be considered 50% attained – with some exceptions – for the mixed warehouses of the Commissary Service, 40% for the Army Repair Yards and for only one Military Region supply unit;

- aim at the gradual removal of most central warehouses and depots of 4th level materials, transferring their functions to the

Fig. 4



lower-level supply organization. There are also considerations regarding the connected necessity to divide the stocks among the abovementioned organizations, which could be developed into "Multiservice Supply Centres". The stocks would be employed under the strict control of the Central Authorities;

- further reduce the present size of the warehouse sections, according to the revision – also under way – of the mobilization organization (5).

The implementation of these measures will occur with graduality, influenced as it is in most cases – besides the studies currently in progress – by heavy infrastructure obstacles. To begin with, 2 Armoured Vehicles Yards (PVC) and 2 Central Warehouses for Combat

Vehicles Spare Parts (MACRICO) have been incorporated, and by 1989 there are plans to (fig. 4);

- unify the infrastructure of all mixed commissary warehouses;
- remove 7 material Depots, 2 Army Repair Yards (ORE), the two Spare Parts Central Warehouses (MACRA) and 22 Warehouse sections;
- give an equal and more modern configuration to the Military Region Catering companies, which are already subordinate to the Directors of the Commissary warehouses; each provides services to 5000 men, besides having full autonomous mobility.

At the end of the reorganization, the 3rd and 4th level of the Commissary, Transport and Material Services will consist of 28 executive organs instead of today's 44.



The Medical Sector

The evolutionary trend of the organization is founded on a conceptually simple clarification which is nevertheless destined to have deep repercussions on the function and structure of the medical organization. The following is on fact envisaged:

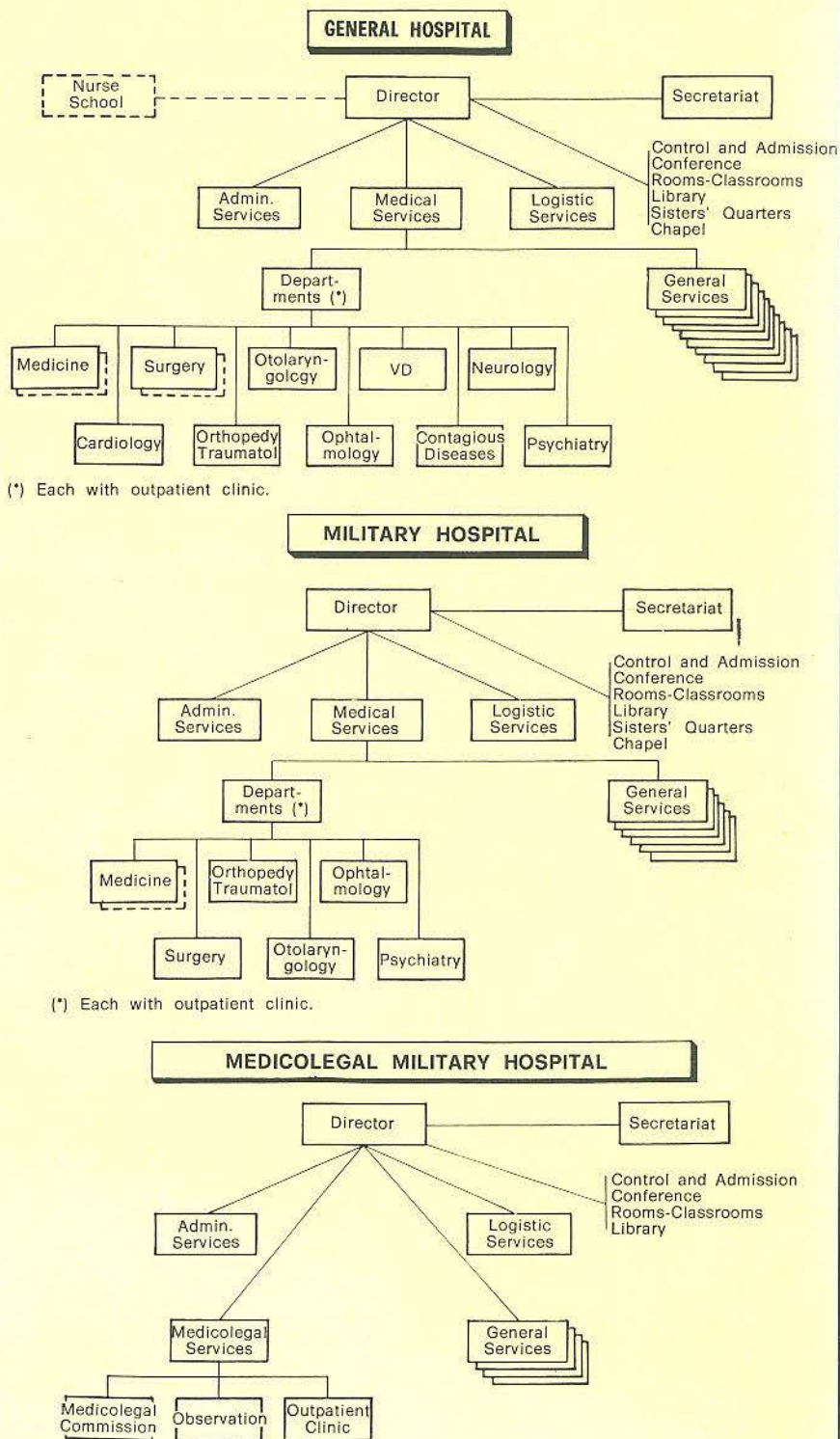
- Some Military Hospitals, transformed into "General Hospitals" will be given the capability to take care of a wide range of pathologies, with particular specializations (also for the dependents of the military, civilian and retired personnel of Defence), to carry out university - level teaching and to train doctors and paramedics;

- hospitalization and care for the personnel on active duty will be concentrated in a smaller number of military hospitals, which will have the full diagnostic capabilities necessary to detect the real pathologies, distinguishing them from the apparent ones;

- the medicolegal activity will be separated and entrusted to especially designated Military Hospitals.

In order to synchronize the current regulation with that of the National Health Service of 1978, a government bill and a Parliament proposal concerning the organization of the Military Health Service are being considered. While waiting for the bills to pass, exploratory attempts are being made to utilize - within a short time - experimentally to begin with, a Military Hospital transformed into a General Hospital. With the pace permitted by the necessary infrastructure adaptations and the availability of medical and paramedical staff (as for this, a specific recruitment and training policy will have to be set in motion, also to reduce the recourse to hired civilian doctors, who will be necessary at the start), the execution phase will be developed over the following years and foreseeably completed by 1989, including also the

Fig. 5



(*) Each with outpatient clinic.

(*) Each with outpatient clinic.

A "Leopard" tank on the look-out. Also the armoured component will be partially modified, with the introduction of second-generation tanks and armoured cars.

transformation already in progress of a Medicolegal Centre into a Military Hospital for long hospitalizations and the abolition of the 3rd and 4th level medical depots exceeding the actual needs.

As concerns the medicolegal activity, a study is being completed with the purpose to integrate in depth the "basins of users" of the designated Military Hospitals with those of the Conscription Councils and Military Districts. As regards this particular aspect, which is of extreme interest for the draftees and for the Administration, the evolution towards single-purpose "medicolegal" Military Hospitals will simplify the procedures and help to reduce the length of the conscripts' medical examinations.

At the end of the reorganization, the medical area will include 4 General Hospitals, 9 Military Hospitals (plus one for long hospitalizations) and 18 medicolegal Military Hospitals, configured as shown in fig. 5.

Conscription, selection, recruitment and mobilization

This sector, one of the most important because it is the preferential link between the people and the Armed Forces, only belatedly has started to feel the demands for renovation which have pervaded the other sectors of the Army for a long time. Luckily this sector is also institutionally suitable for receiving and exploiting the EAD capabilities.

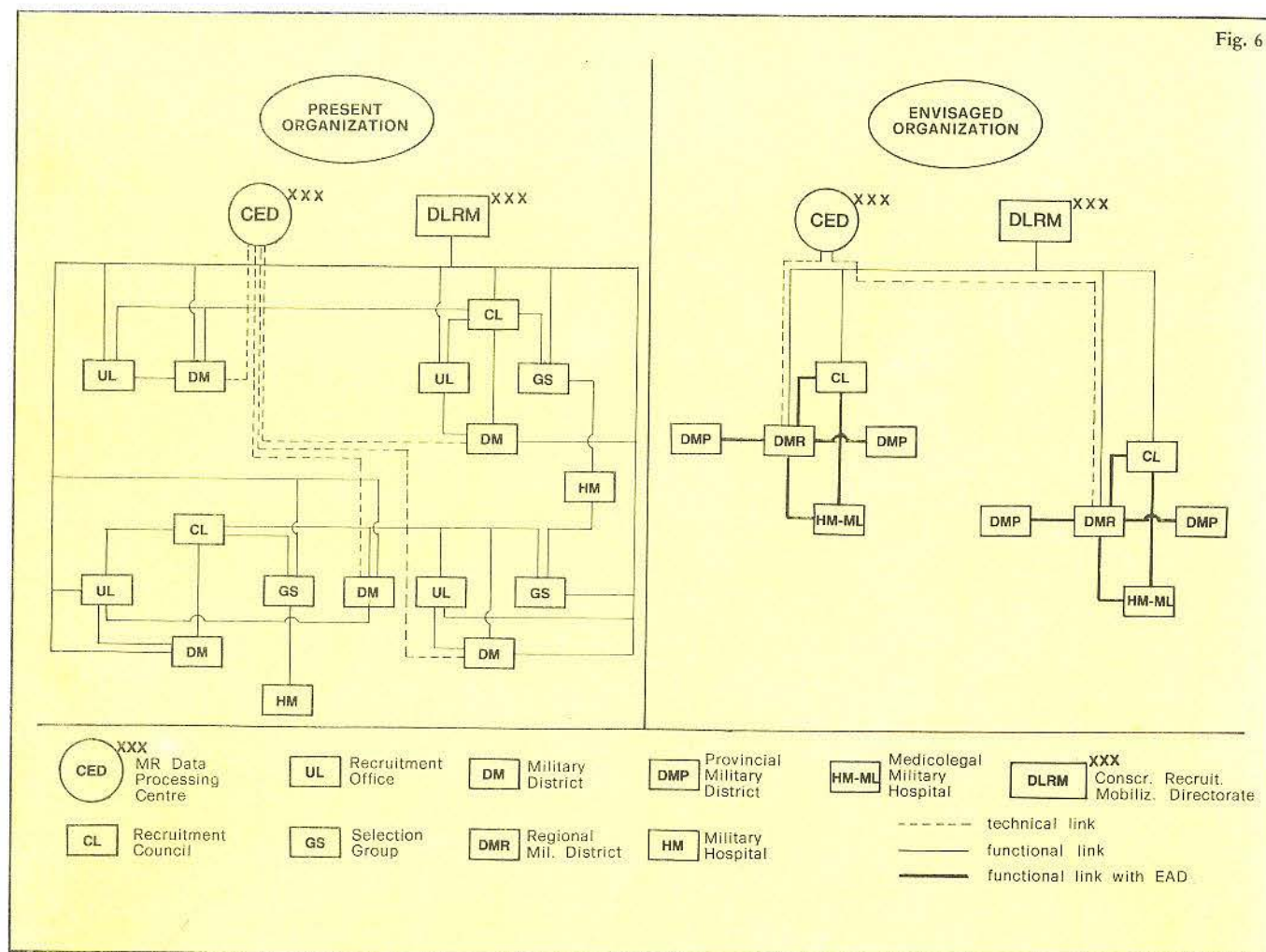
The renewal's main lines have been conceptually defined in 1981 and have become more clear after the in-depth examination carried out by the General Directorate of Conscription, Recruitment, Militarization, Civilian Mobilization and Auxiliary Corps. At the end of an indispensable

preliminary experimental phase, carried out with the effective support of the North West Military Region, an intermediate-level directive organ has been deemed necessary: a Military Region LRM Direction (Leva, Reclutamento, Mobilitazione = Conscription, Recruitment, Mobilization) recently instituted and directly subordinate to the Commander of the Military Region. This measure has an undeniable advantage, in that it concentrates, simplifies and makes more homogeneous the complicated relations between the command and directive organs at the various levels and the executive peripheral organizations.

In the next months the LRM Directions plan to consolidate and refine the relations and procedures with the higher and subordinate organizations and, at central level, to perfect the system as a whole. As a matter of fact, by 1989, there are plans to attain various important interconnected objectives:

- as regards **conscription**, to eliminate all doubts about the conscripts' physical fitness to military service, by improving the specialistic medical examinations (also in view of effectively helping the National Health Registry);
- for the **selection** of the conscripts, to reduce the theoretical tests to the essential and single out, on enlistment, only the indispensable parameters, on a prevalently practical basis. As a highly desirable side effect, a reduction of the ill-famed "three days" will be obtained;
- for the **recruitment**, to do away with some malfunctions which still occur by improving the current automated programmes and procedures;
- for **mobilitazione**, complete the already started automation process, in order to optimize the management of the available personnel;
- for **public information** and **certification activities**, to reduce





the system's "time of reaction" and lay down the appropriate preconditions, so that any Military District will be in a position to meet the citizens' requests.

The year 1986 has witnessed the first steps of the functional update, with the introduction of the Olivetti "SP-700" medium power computers at the most important Military Districts. In 1987 the structural modernization will start (fig. 6), at the end of which the sector will operate with:

- the same number of Military Districts, only one third of which will deal with recruitment and mobilization. Being essentially connected with the administrative regions, with the few exceptions deriving from the distribution of the population and the number of conscripts, these will be called "Regional", to distinguish them from the ones that will

continue to carry out information and certification activities and which – in view of establishing them also in the Provinces where they don't exist at present – could be labelled "Provincial";

- a number of conscription organs (Conscription Councils, Conscription Offices and Selection Groups) equal to one third of the present one, and working in close cooperation with the Regional Military Districts.

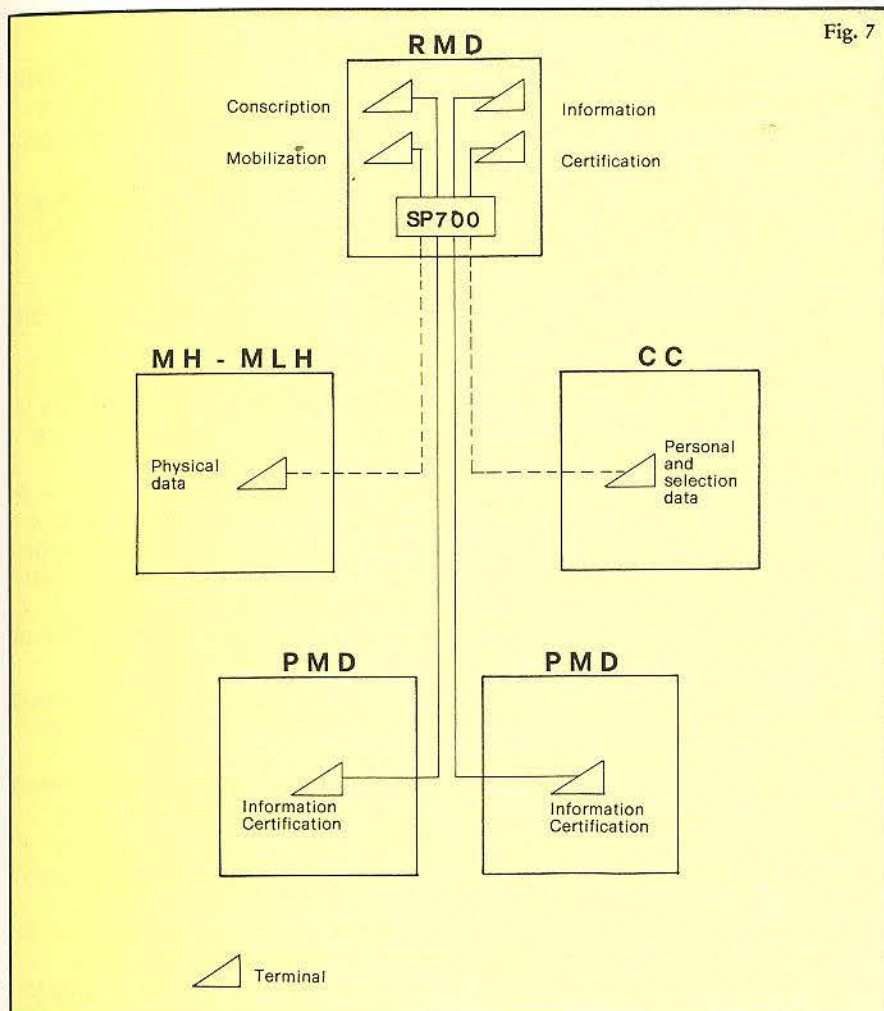
Each of these Districts will therefore become a pole of aggregation and data bank of a microsystem hinged on the "SP-700", which will include a Conscription Council, a medico-legal Military Hospital and a number of Provincial Military Districts (fig. 7).

This will imply not only a great organizational effort as regards materials, procedures, internal rules and, in part,

juridical norms, but also – and especially – a radical change of outlook. For practical and psychological reasons, the new structure will therefore be adopted gradually, starting from the Military Regions where conditions as a whole are more favourable, and expanding through the entire territory by 1989.

SCHOOLS AND TRAINING

Also the Organizations charged with the tasks of training, specialization and qualification of the regular and conscript personnel have been submitted to a careful critical examination. At first sight, their global size could appear over-proportionate as compared with the requirements of the Service and it must be admitted that some areas of redundancy do exist. But what is going to be



done would especially meet criteria of rationalization and better performance, while the savings that could be made, on the whole, would be negligible.

Moreover the training and school units give an essential contribution to the current system of mobilization, therefore it would be rather difficult to exclude their contribution without diminishing the response and credibility of procedures in this sensitive sector.

The recruit training battalions have recently undergone significant cutbacks, considering that in 1985 three of them were transformed into motorized battalions. The rest are just adequate to the needs of recruitment, and the desired margin of flexibility to face an emergency verges on the lower limit.

Anyway, in the attempt to further reduce the battalions, in 1985 the "direct inflow" of the

recruits to the employment units was tested at two Brigades, stationed in two different Military Regions. Actually it was a matter of extending to some battalions a procedure which is already in force in certain schools. But while the latter have no problem in accepting young men coming from civilian life, experience has shown that obstacles do exist to an extensive adoption of the "direct inflow". In fact, against the positive aspects represented by an improvement in the continuity of the command action, some reduction in the "loss" of draftees and, especially, a better unit amalgamation as well as the establishment of better relations between the soldiers' families and the units, there has been a substantial increase in the training burden and in bureaucracy which – owing also to deficiencies as regards Cadres and training

areas – could soon translate into a decline in the operational efficiency of the battalions.

On the whole, the current system is therefore the most convenient. And it seems that it is going to remain unchanged, unless a dramatic change occurs in the parameters of the situation. Also when the Service overhaul is accomplished and the envisaged economies of enlisted men are obtained (about 16,000 soldiers by 1989), the recruitment needs will diminish only by about 6%: not a negligible figure, useful to give a little resiliency to the system, but which is not easily translated into a reduction in the number of BARs (Recruit Training Battalions).

Also for Schools there have been explorative experiments between 1983 and 1985, to lighten the burden of training by transferring a part of it to the operational units, as it was for a long time with the jobs that do not require particular specializations or with which "previous experience" is a sufficient condition. But the experiments, in general, have given negative results, as it occurred with the tank crews at two armoured Brigades. With the introduction of means easier to employ, whose maintenance and reparation can take place at 1st and 2nd level, the need to have specialized personnel in some given sectors will diminish in the future, but very likely this occurrence will be offset by an opposite trend in some other sectors.

Consequently the only principle on which a reduction-oriented reorganization of the Schools can be founded is that of maintaining and optimizing the essential functions, in view of incorporating as much as possible, not abolishing, the existing Schools. This has proved to be technically feasible and desirable for:

- the two Armour Schools (Armoured Troops in Caserta and Armoured Troop Specialists in Lecce), by implementing a measure that has been under consideration for several years.

Their unification in a single institute will have only positive effects, especially in terms of cohesion of the trained personnel, and – if the chosen location is Lecce – it will make the Caserta infrastructure available for a similar operation in another sector;

- the Signal School at Rome-Cecchignola and the Signal Specialist School at S. Giorgio a Cremano which – relieved from the job of providing technical-logistic training and from some other tasks that can be carried out at the battalions, thanks to the simpler methods of employment of the forthcoming materials – could be concentrated between Caserta and S. Giorgio a Cremano;
- the four Schools for transports and materials (Transports and Material Schools, Army Motorization and Electronic Technicians Schools, all at Rome-Cecchignola, and Army Centre of Armament Specialists at Piacenza), which will be able to better integrate and coordinate their activity, in compliance with the "model 80 logistics" also in the training field, at the unified location of Rome-Cecchignola.

All the necessary measures require significant infrastructural adaptations and a rigid time coordination. We see the outlines of a wide-scope programme which, although its planning was started already in 1986, will not be completed before 1990 or 1991.

THE OPERATIONAL FORCES

As we mentioned before, the operational forces are involved in reorganization only as far as the chain of command is concerned.

The amount of "Brigade modules" (we use the term of comparison adopted in 1975, to evidence the cuts made in the combat units) cannot be reduced any further. Along these last years it has been repeatedly affirmed on various occasions, and it has been verified through painstaking operational studies, that the minimal structure needed

by the Army in order to ensure the implementation of the joint missions (6) is **more** than 24 Brigades. Therefore this configuration is already inadequate; as a consequence, many different tasks must be assigned to some Brigades, accepting the risks deriving from the simultaneity of several requirements of employment.

Large-scale mobilization is unfeasible, both because in our time the manifestation of conflicts is sudden and unforeseeable and because of the geostrategic situation of our country, which does not allow longtime preparations of the military instrument. Extensive mobilization would be onerous on the financial plane: needs being equal as regards the update of materials, which would remain substantially unchanged, the working expenses would diminish on one side, because a lower number of men would be called for service, but would increase on the other – and certainly a great deal more – for the need to make recourse, more often and for larger numbers of personnel (especially officers and NCOs) to recalls for training, and for the necessary expensive maintenance of the materials stored.

For the operational forces – mostly in view of the planned introduction of C³I equipment – only a streamlining of the chain of command is envisaged, which can be identified with the pure triad "battalion (fundamental unit of employment) – Brigade (elementary Major Unit) – Army Corps (complex Major Unit)". The abolition of the divisional level has obviously entailed a certain reorganization of the Major Units' supports. The occasion has also been used to:

- limit the quantitative unbalance between the three Army Corps (which included respectively: 4 Brigades, the 3rd Corps; 5 Brigades, the 4th; 10 Brigades, the 5th, including the Missile Brigade);
- mechanize the "Vittorio Veneto" Armoured Brigade for operational needs, as recommended by a

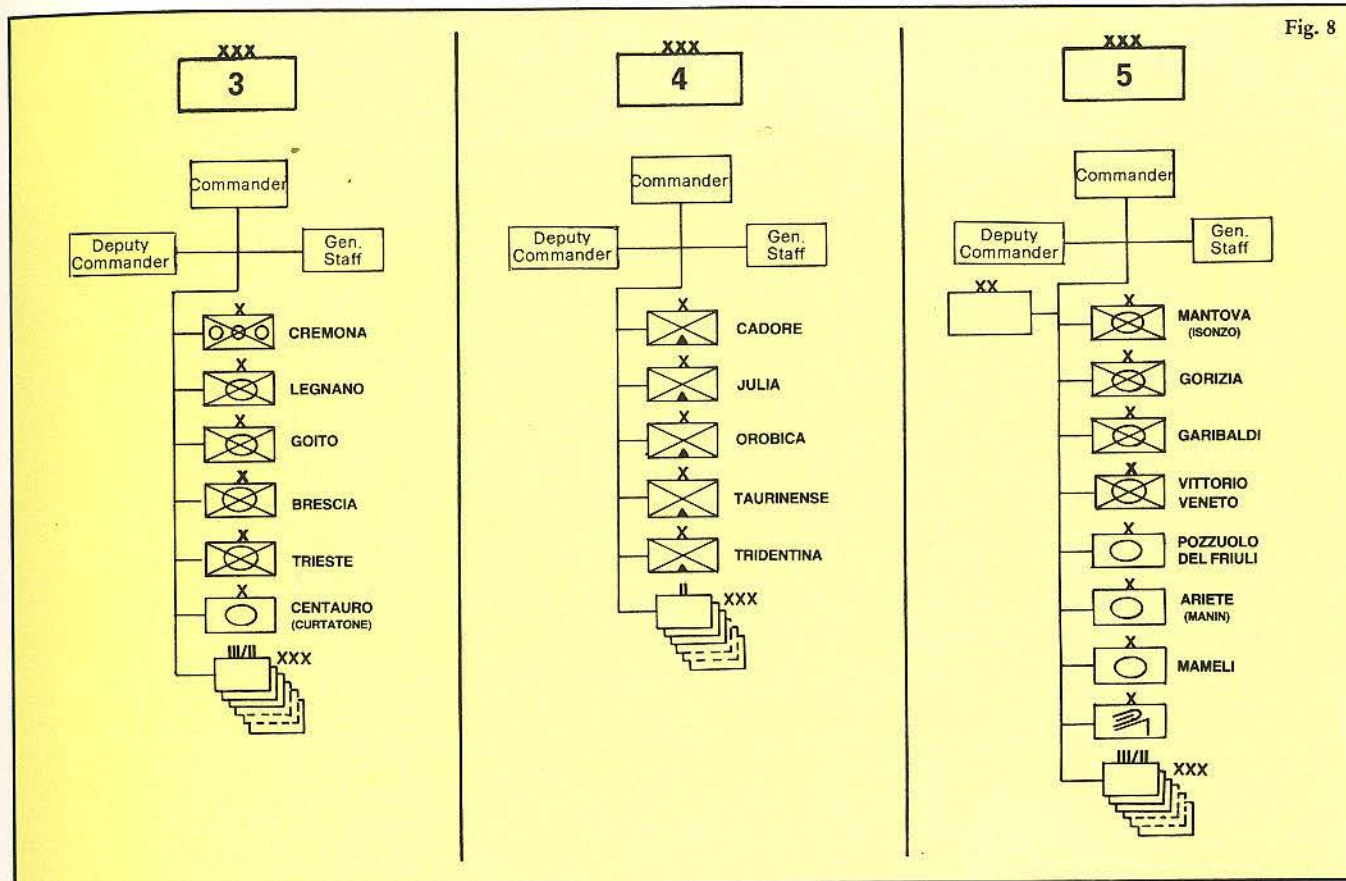
study carried out with the Headquarters Land Forces Southern Europe (LANDSOUTH);

- increase the ability to react promptly in emergency conditions outside the Army Corps;
- create the preconditions for correcting the functional deficiencies of the operational instrument which, although detected already in 1975, could not be rectified for mainly technical-industrial reasons;
- organize the Engineer units – currently still anchored to the traditional division among pioneers, sappers and miners – in a way more in keeping with the development of the "adherence" actions in favour of the Combat Units and with the tasks of higher technological contents at Complex Major Unit level;
- do away with some anomalous situations in the organization of the Service.

These objectives have been translated into the following measures:

- abolition of the Headquarters of the four Divisions, whose traditions and names survive in as many Brigades;
- institution of a FIR (Rapid Intervention Force) Command which the "White Paper 1985" had already pointed out as necessary in the framework of the fourth and fifth joint mission (7);
- attribution of new tasks and a more agile structure to the Trieste Troop Command;
- abolition of the Headquarters of three Artillery regiments;
- transformation of a fourth Artillery regiment in a unit for testing new equipment (fire delivery and technical-specialistic means (which in the coming years will be employed by the land and antiaircraft artillery, as well as the relevant technical and employment procedures);
- transfer of a few battalion-level units to the mobilization units;
- implementation of the necessary changes in the subordination of the Brigades and their supporting units, and minor organization adjustments in some of the latter.

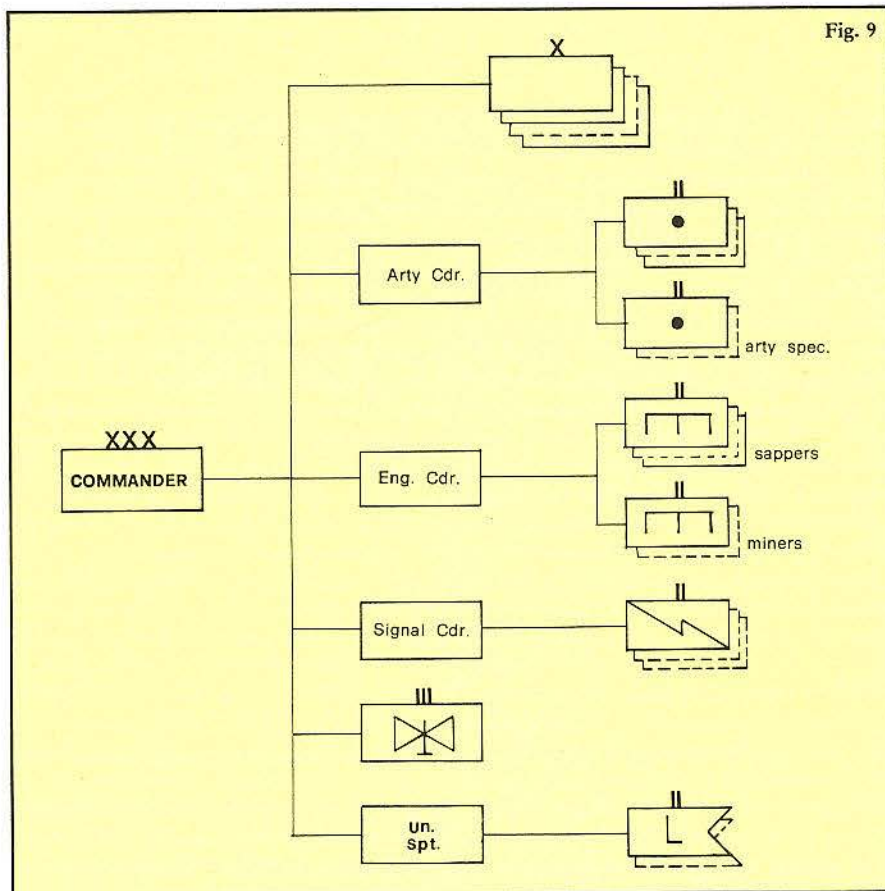
Fig. 8



The new structure of the Army Corps is represented in fig. 8 and fig. 9. One should notice the modifications in the chain of command, which includes also an Army Corps Deputy Commander (who is the natural substitute for the Commander and is placed at his side to guide and control sectors and activities of special interest) and in which the Service Commanders assume more importance as organs of command besides acting as advisers to the Commander. Moreover another rather inconspicuous figure of the past is also emphasized: the Commander of the Support Units – former CUS – whose functions are clearly indicated by his denomination, while in the 3rd Corps the Army Aviation units are at present coordinated by an ad hoc command. Of course also the Corps General Staff has been adapted to the increased functional requirements.

Starting from 1987, the reorganization will be gradually

Fig. 9





completed through the acquisition of new means and with the consequent gradual transformation of some support units.

Drones, mini-RPVs and radars will be introduced; the missile self-defence "mix" (25 mm self-propelled gun – Sky-guard/Aspide for low and very – low altitude anti-aircraft defence) will be employed; the general fire support will benefit from the modernization of the technical means and the introduction of MLRS (Multiple Launch Rocket System); the anti-tank defence, finally, will be improved with the "A-129" helicopter.

The indispensable framework for the management and control of all communication systems and of most fire sources will be constituted by the Transmission and Information Field System called CATRIN (8), already under development,

which will permit to employ EAD also in the operational field.

Meanwhile also the tank and APC lines will be renovated with the introduction of the second-generation tank and armoured car in different variants, starting from the one armed with heavy weapons. Probably, as a consequence, the characters of some Brigades will have to be modified in order to obtain a better correspondence with the natural environment and the operational tasks.

The mechanized and armoured Brigades, the most qualified for the arrest actions and for the development of dynamic reactions in the flatland areas of the combat zone, do not require substantial modifications. But considering that the tasks must correspond to the characters of the national territory (hills or mountains for

"6616" armoured car. This 4-wheel drive, 160 HP vehicle is highly mobile both on road and on rough terrain, is equipped with a two-man turret, and armed with a 20 mm cannon and a 7.62 coaxial machine gun.

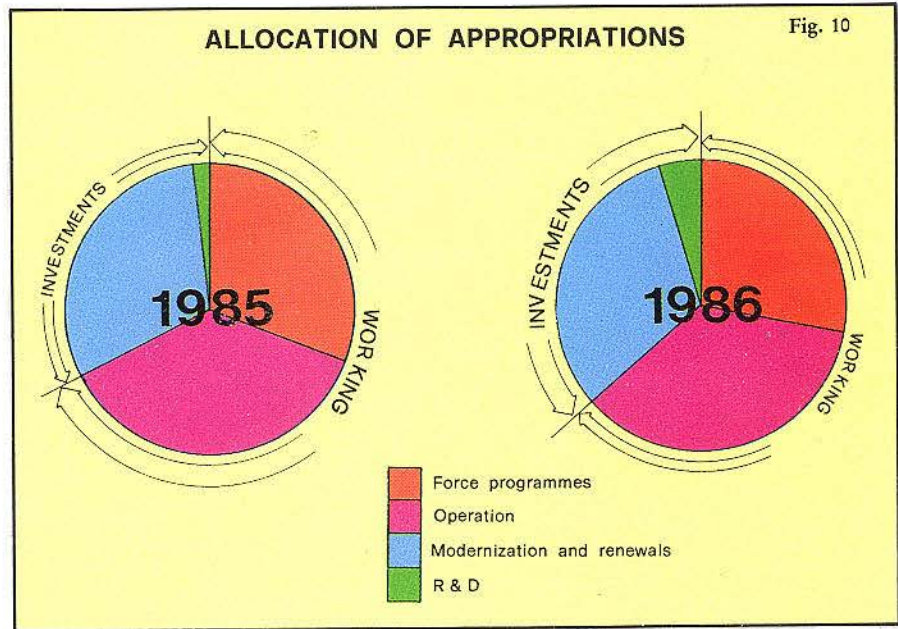
almost four fifths, with an increasingly dense net of settlements, and with a shape elongated from north to south) it is quite evident that the tactical-logistic mobility and the armament of the other Brigades must be improved. It is a spur to develop the concept of "light infantry" which should be suited to the national case for special actions: against sea-and-air landings, counter-guerrilla warfare, mountain combat, etc. In view of this, one sees the need to give more and more importance to the human factor: in order to achieve a given mentality and ability, training must be promoted and specialized.

CONCLUSION

During the next years the Army will be untiringly engaged in the process of modernization started in 1975 and never completed for a number of reasons, almost all of them more or less retraceable to external causes.

Now we have favourable conditions for completing our design. The present state of the problems, the incipient availability of support from informatics and the solid prospects regarding the near-at-hand introduction of new materials make us optimistic about its adequacy to the requirements and the possibilities of success. There are still details that need defining: at this stage it could not be otherwise. In some sectors (such as the medical and conscription – selection – recruitment ones) some regulations will have to be modified and, in order to overcome doubts, uncertainties and the natural resistance to changes of deep-rooted procedures and mentalities, prolonged efforts will have to be made in every field. But we can, and must, look at the positive aspects which are fundamental: the clearness of the final picture and the willingness to proceed in that direction, if we want the Army to be up to its institutional tasks.

This new picture marks an important moment, which should rouse not only the interest of the experts: for the first time after many years the intention to privilege the investments will be translated into operative decisions, reducing the operating expenses and assigning to the operational forces the sums carved out from the support sector. The reversal of trend, already perceptible in 1986 (fig. 10) (9), will be more evident at the end of the programme: there is hope to spare about 16,000 soldiers by 1989, two thirds of whom coming from the territorial-logistic and training areas. The consequent savings in working expenses, over 100 billion lire per year, will be reinvested to increase the "capital".



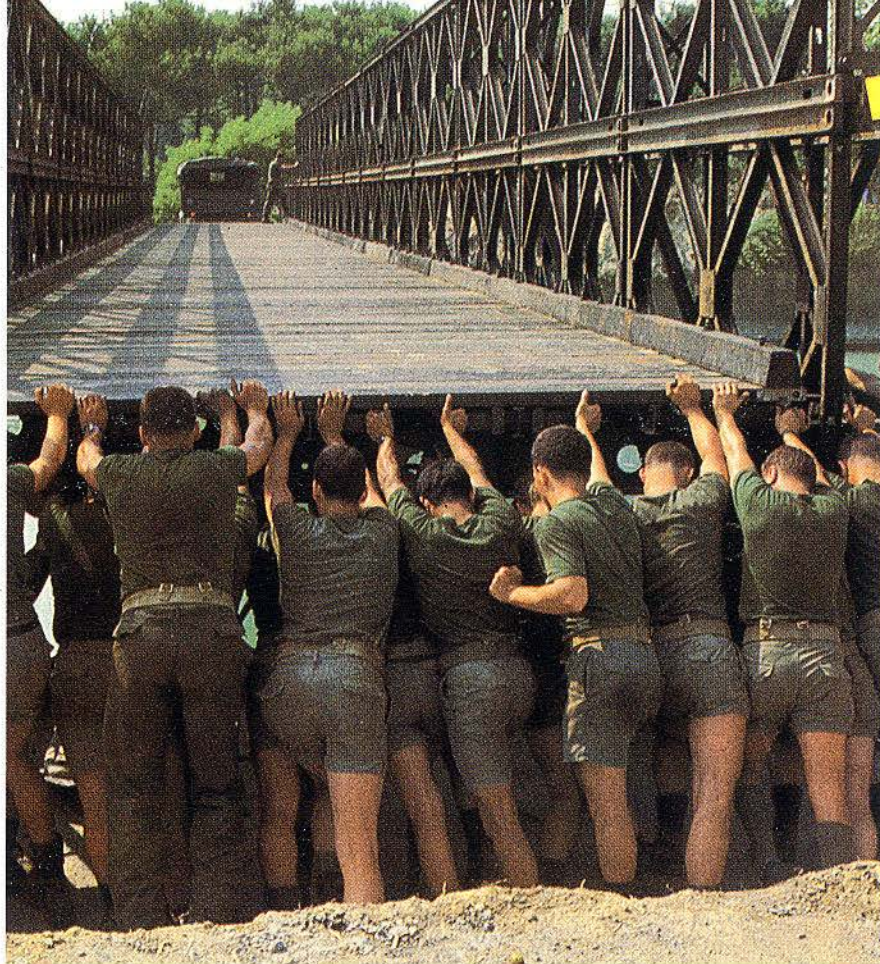
The officers and NCOs made available by the abolition of many territorial organizations and Division Headquarters will make up for the present deficiencies and will serve to increase the efficiency and the force levels of the operational units.

Nevertheless it will not be a painless solution, and everyone will have to do his share for the benefit of the country and the military community. In this regard one ought to stress that, although the Army Corps started – and will complete – the envisaged transformations earlier than the "support" areas, the most significant modifications will indeed concern the latter. Between the option to start the reorganization of functions and structures only in the territorial and training organization, on the one hand, and, on the other, that to act at once in every field, the second option has been chosen, because within the Army there are all the conditions to do it.

The indispensable condition – the lack of which would alter the whole evolutionary process – must be, of course, the overcoming of every sociopolitical influence. The Country must accept the abolition of some organizations or their destination to other locations, in the

superior common interest. This is a particularly important fact for the Army, for its components are institutionally fractioned and branched out over the entire national territory. Granted that due consideration must be given to the practical, psychological and sometimes even emotional bonds that grow between the population and the military-bonds that become more deep-rooted as the coexistence lasts in time and the continuity of relations is taken for granted – the common good cannot be placed after partial interests.

At the same time, one realizes that the complex range of measures will entail inevitable inconveniences for a part of the personnel. But, while the civilian staff, a minimum part of whom are in any case involved in the reorganization, will easily find reemployment in the same locations, Officers and NCOs could be transferred to other places. In order to promote the punctual and correct implementation of the entire programme, we must have, as soon as possible, the necessary normative tool which gives an adequate compensation for transfers, already envisaged in a bill presented by Defence and in various bills being examined by Parliament.



The Engineer units, which at present consist of pioneers, sappers and miners, will be employed in a way more in keeping with the development of the "adherence" actions in favour of the Combat Units and with the tasks of higher technological contents at Complex Major Unit level.

Also other laws currently before Parliament should be passed as soon as possible; i.e. the proposal to increase the number of NCOs in view of the prospective introduction of new and more sophisticated weapon systems and of the EAD and C³I support equipment, the revision of the criteria on which the remuneration of the military is based and the modernization of the Army infrastructure.

Col. Gian Giuseppe Santillo

NOTES

(1) See "L'Informatica nell'Esercito oggi", Informatics in today's Army, by Carlo Balsamo (Rivista Militare It. Ed. no. 6/85) and "L'Informatica nell'Esercito", Informatics in the Army (Rivista Militare Booklet, 1/1986).

(2) The subject is discussed at length in Part IV of the "White Paper 1985 - The Defence".

(3) Army General Staff, Circular no. 569/142153 of Dec. 24, 1985.

(4) In the future, the Pension Centres could also pay the ordinary definitive pensions and the ordinary privileged pensions, after an amendment of the regulations which entrusted this task to the Provincial Directorates of the Treasury.

(5) After the Zone Military Commands become "Administrative Agencies", the warehouse sections could be relieved from book-keeping tasks and deal only with the practical management of materials.

(6) As is known, the "White Paper 1985" describes five main joint missions. The Army is interested in all of them, and particularly in the following:

- first (defence in the North-East);
- fourth (operational defence of the territory);
- fifth (peace, security and civil protection actions).

Furthermore, the Army concurs in the second mission (defence in the South and lines of communications) and in the third (air defence).

(7) The new Command joins that of the "Ready Intervention Force" (Fo.P.I.), destined to operate for the same joint mission but earmarked for cooperation with the Civil Defence organization.

(8) The CATRIN system includes:

- a subsystem for the Search and Acquisition of Objectives (SORAO);
- a subsystem for the Tactical Sighting, Command and Control of anti-aircraft defence (SOATCC);
- a subsystem for Integrated Transmission (SOTRIN).

(9) In 1986 the share of the Army appropriations destined to investments has gone up to 35.8% from 34.4% the preceding year, with a corresponding reduction in the discretionary expenses.

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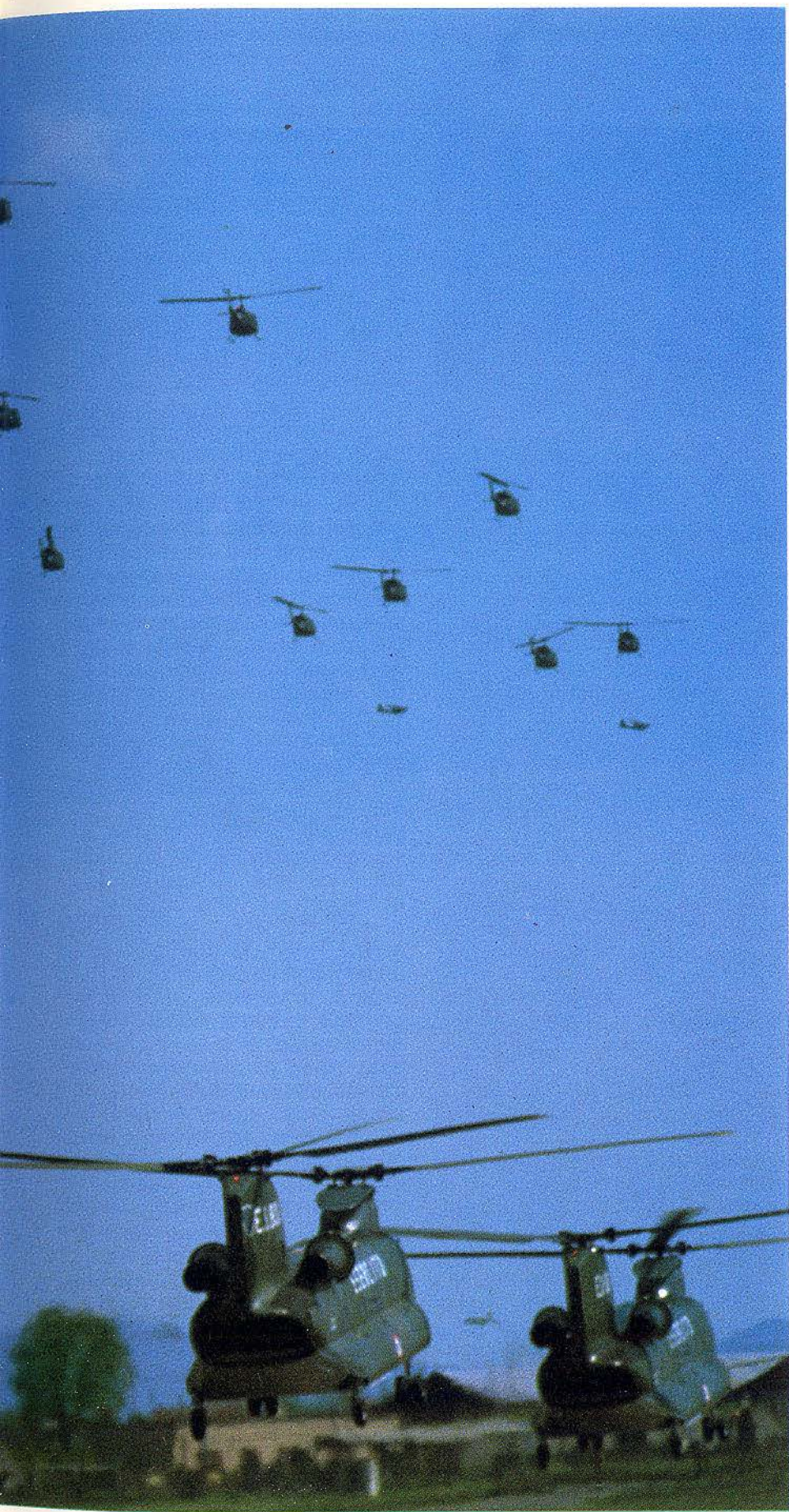
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IN CASE OF INTERNATIONAL CRISIS
**PROTECTION
AND EVACUATION**
OF ITALIAN CITIZENS ABROAD





The economic integration of industrialized with developing countries almost always leads to the widespread presence of technical personnel in the latter, especially in those with a wealth of natural resources. However, the political and diplomatic relations on which this exportation of technology is based can undergo sudden transformations in the wake of unforeseeable changes in the political stability of the host countries, making it expedient and even necessary to repatriate such personnel. There is no need to go very far back for confirmation of this statement. The recent crisis in the Mediterranean, which saw Italy as the unwilling centre of tensions, has forced the governments of various countries – including Italy – to face the problem of repatriating their citizens from what had suddenly become “hot areas”.

The solution to problems of this nature, where the need to ensure the safety of those concerned can lead to dramatic situations, is a matter of great complexity in which the principal and normally decisive role is played by politics and diplomacy. However, the preparation and possible implementation of military action is also involved.

The possibility of military action is explicitly envisaged in the “1985 Defence White Paper” in the context of the 5th combined forces mission, which states: **“The worsening of the international situation, especially in the Mediterranean area, could require Italy, as has already happened in the past, to participate in such peace-keeping activities as intervention in support of an armistice, guaranteeing the human rights of minority groups, or the protection and evacuation of Italian citizens abroad directly exposed to serious danger”**. The aim of this article is to examine whether and how such a mandate can be executed.

POSSIBLE SITUATIONS

Depending on the attitude of the local government (whether favourable or not to the repatriation of Italian citizens) and the extent of its ability to guarantee the safety of the operation, three different situations with different solutions can be imagined.

The common starting point is obviously that of a country either subject to a great deal of internal tension and disorder or in open conflict with other countries. The first and simplest hypothesis assumes that the local government is cooperative and in a position to guarantee the safety of any personnel. In this case, the operation is simply a matter of the logistics involved in organizing an airlift, or its naval equivalent, of adequate size to cater for the numbers of those concerned. As the situation is not necessarily one of urgency, the facilities normally operating at the points of departure can provide such aid as may be required. It is also expedient to provide for the organization of temporary accommodation, any necessary medical examinations and the regulation of the flow of repatriated personnel at the points of arrival. In short, this type of operation presents a negligible level of risk and does not require the preparation, much less the execution, of military action.

The second hypothesis assumes that the local government is uncooperative and does everything in its power, by fair means or foul, to hinder the repatriation of foreign citizens. This is obviously the worst possible case as it prevents the implementation of any effective measures other than diplomatic steps, whose results are uncertain. However, military action must in any case be organized and held in readiness, while bearing in mind that armed intervention (by analogy with anti-terrorist operations) involves a great deal of risk for the very personnel one is trying to rescue. The repatriation of

nationals can only take place through the promptings of the government and the ability of individuals to exploit their every opportunity. Of the greatest importance in such circumstances are the decisions taken by the national authorities and the adoption, with a certain degree of reserve, of the most appropriate measures: appraisal of the expediency of repatriation, choice of the moment to invite citizens to repatriate, development of "flanking" activities in neighbouring countries with the aim of facilitating an early exodus, the level of urgency assigned to the operation, and so on.

The third hypothesis assumes that the local government is agreeable to the repatriation of Italian nationals but is unable to guarantee the safety of foreign personnel. This case seems to correspond best to the one envisaged in the "Defence White Paper". The great number of parameters to be considered make this type of problem a point of reference for the identification of elements to be included in planning. However, the indeterminate nature of the parameters and the complexity of local situations mean that such planning can only be carried out in general terms and based on standardized operational procedures.

ELEMENTS OF THE SCENARIO

These may be largely compared with the factors taken into consideration in tackling operational problems: natural environment (geographical features of the country involved), hostile forces (situations of internal or external conflict that have brought about the crisis), friendly forces (situation of the personnel to be repatriated or the operational combined forces unit to be employed).

The examination of geographical features is particularly important as the conditions they determine will affect not only the type of action to be adopted

but also the feasibility of the operation. The features of interest are essentially the following:

- the distance of the country under examination from Italy, its continental position and the countries sharing borders with it;
- the possibility of internal and external links (network of communications), especially with Italy and the neighbouring countries;
- the distribution of usable ports and airports and their potential capacities;
- the presence of areas where situations of danger could arise for Italian nationals and their location with respect to the communications concerning us.

The analysis of these factors must permit the identification of: the modality of transport and possibility of concentrating personnel in the assembly and departure areas, the time necessary for the execution of the various measures, the level of danger involved in the operation, and the possibility of cooperation from neighbouring countries (an aspect to be evaluated with care in cases where the personnel to be repatriated is situated much nearer to such countries than to the points of departure). The situation of internal or external conflict at the origin of the problem under examination is more difficult to evaluate since it is normally brought about by factors which cannot be precisely determined a priori and which can develop and deteriorate in a very short space of time.

However, the examination of constant historical factors, of traditions, of the political situation of the moment and of emerging trends does make it possible to formulate loose hypotheses (requiring periodical revision) as to the existence of conditions of internal or external conflict. The former are of interest for the identification of the safest areas, those in which the chances of tension developing between opposing factions are minimal. The latter help direct the choice of

The security forces act above all as a deterrent. Around each departure area a cordon sanitaire must be created of such width as to protect the personnel to be evacuated and the carriers from automatic weapon fire.

locations least exposed to danger.

The third and last element to be borne in mind is the situation of the personnel to be repatriated (close examination of the military means to be used will not be carried out in this article on the assumption that the criteria normally adopted for the study of operational problems will be applied). This enables the definition of the modality of personnel recovery and the evaluation of its effect on the local inhabitants, as well as predictable reactions. The parameters to be considered may be limited to the following:

- the overall numbers of personnel, subdivided according to sex, age and distribution over the territory;
- sectors of employment of individuals, with the aim of identifying elements whose removal could cause such uncontrollable reactions as to compromise the success of the whole operation;
- links with the communities of other countries who might be interested in analogous measures;
- a complete list of the means (private or company-owned) available for transporting personnel, on the assumption that transportation from the localities of residence to the departure points will have to be carried out with the means (possibly collective vehicles) available on the spot.

Examination of these parameters will make it possible to identify the limitations imposed by the scenario, the requirements to be met and the overall feasibility of the operation, i.e. a large part of the basic data essential for the correct formulation of the problem and the definition of the most appropriate line of action.



OUTLINE SOLUTIONS

The problem has two clearly distinct facets: one logistic and the other operational. The former predominates, not so much for its atypical nature as for the complexity of its organization and execution and the fact that it must in any case be put into effect in an operation of this kind. It will therefore be dealt with first, examining in turn the elements involved in the development of the operation:

- **departure points:** the ports and airports. They are to be chosen, wherever possible, on the basis of safety from attack, suitability vis-à-vis the way personnel is distributed and the degree of feasibility they can contribute to the operation. The availability of a number of departure points, some of which even being located in the interior, permits the almost simultaneous flow of personnel and reduces the discomfort involved in what may be long journeys to reach the

departure points. It is necessary to equip each departure point with an organization capable of providing for the basic living requirements of the personnel to be evacuated, since they will have to remain there for at least as long as it takes to load the carriers. To achieve this, rudimentary logistic organs will have to be set up to take care of the provisioning, medical facilities and control of the personnel to be repatriated;

- **assembly points:** the localities in which the personnel distributed over the country must gather to be marshalled to the departure areas. They are, in practical terms, the peripheral elements of the organization. Columns will be formed there to proceed, under the protection of security forces, to the departure terminals. The personnel concerned are to arrive at the assembly points from their places of residence under their own steam and in accordance with modalities and schedules defined on the basis of the local situation and the circumstances. It is also necessary to provide each point with someone in charge of organizing assembly and the subsequent journey to ensure that operations take place with a certain order even in the absence of military units;

- **routes from assembly areas to departure points:** these are to be chosen above all with regard to safety requirements and the possibility of providing the columns with assistance;

- **arrival areas in Italy:** these would normally be provided by the ports and/or airports of arrival. They must be defined and organized in such a way as to ensure a smooth and rapid flow of repatriated personnel. This means that they are to be selected above all with regard to the availability of structures to accommodate the personnel, albeit only for such time as is absolutely essential;

- **means of transport:** this is a matter of estimating the number of planes and/or ships necessary to evacuate the personnel from

the different departure points – if possible – in one trip. To achieve this, choices must be orientated towards the requisition of commercial carriers, since the military carriers will be required (it is not possible to determine numbers a priori) for the military component either employed or held in readiness for the operation.

The planning of the means necessary is no easy matter as the number of those to be evacuated can hardly be determined a priori. It therefore appears expedient to resort to the principle of modularity, defining a "model carrier" for each country which can be used to compare all other available means. This criterion is particularly useful for the calculation of aircraft, given their comparatively limited payload with respect to the requirements of evacuation. For example, if the "DC-9" is taken as a "model carrier" for 100 passengers, the other aircraft of the national airline will correspond to multiples of "DC-9". In the emergency, it will be sufficient to define for each airport of departure the number of "DC-9s" necessary for the number of passengers and send as many aircraft as correspond to the seating requirements.

An analogous modular criterion should be adopted to estimate the military aircraft required for the security contingent. In this case, the basic modules will be provided by "model platoons" (with and without vehicles, with operational or logistic functions, etc.) related to the different types of transport aircraft belonging to the Air Force. It will thus be possible to adapt the composition of the contingent rapidly to the aircraft available at the moment.

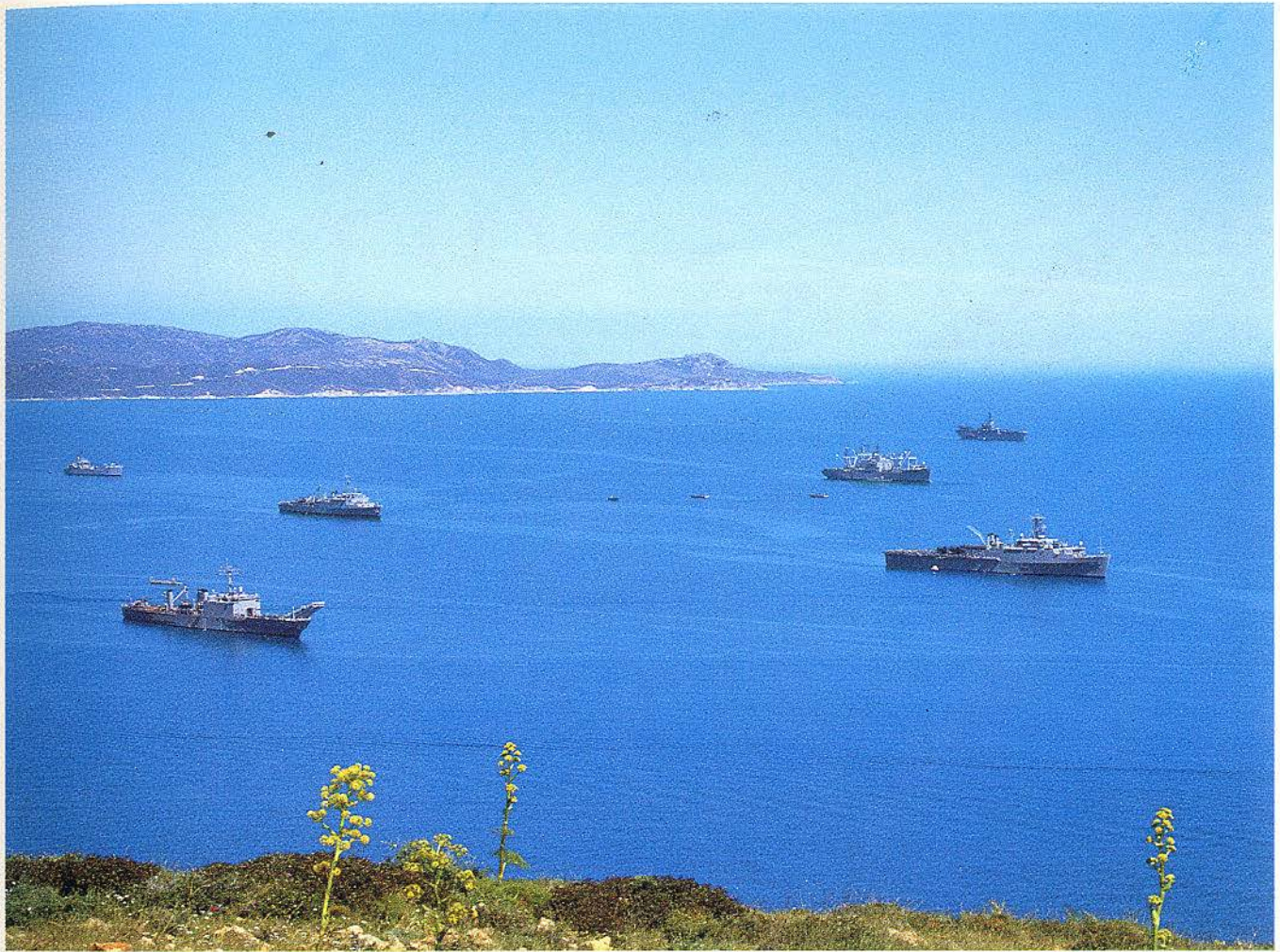
On the other hand, estimation of the required number of ships is relatively easy given the great transport capacity of each carrier.

It should be observed that the implementation of the planning outlined here assumes specific political and diplomatic

activity between Italy and the country concerned, which also involves the military structures. Following this order, the drawing-up of plans should come under, the duties of military attachés as regards actions to be carried out by the respective countries and then developed through the Ministries concerned. The Headquarters and the units to whom the mission will be assigned should also be directly involved so as to avoid improvisation and the unsatisfactory results this always leads to.

The second aspect of the problem regards the operational side, i.e. the organization of the measures taken to guarantee the safety of the operation. This organization must be created both in cases where the local government is agreeable to the organized repatriation of Italian citizens and where there is opposition to any form of cooperation. The employment of the operational component must in any case be planned in such a way that it can be put into effect rapidly and smoothly should the situation so demand. Analysis of this subject will be confined to aspects concerning the land, as those regarding air and sea come under the traditional criteria of employment of each Service.

The requirements to be met regard three phases of the operation: the concentration of personnel at the assembly points, the movement of columns from the assembly points to the departure areas, and the time spent in the latter. The dangers which can most realistically be imagined are, in general, those characteristic of guerrilla warfare and street-fighting. In concrete terms these are limited to the use of automatic weapons or roadblocks. The security forces, which act above all as a deterrent, must be provided with the composition, arms and means necessary to carry out their tasks. Around each departure point a cordon sanitaire must be established of sufficient width to protect the personnel to be evacuated and the carriers



For operations of repatriation, it is necessary to estimate the means of transport necessary to evacuate the personnel from the departure areas in one trip, if possible. Ships are best suited to this task in view of the great transport capacity of each carrier.

from automatic weapon fire. As the function of these forces is exclusively defensive, their aims should also be made clear externally through the use of flags and notices in the local language.

The protection of the assembly points should be ensured in similar fashion. The time spent there by the security forces must be kept to the bare minimum necessary to form the columns, whose safety will be guaranteed with the modalities laid down for convoy escort. Given the type of danger envisaged, the security contingent should be equipped with weapons

of great fire power and vehicles protected against fire from light weapons. The quantity and type of the latter will be defined through the modalities by which they have been brought to the zone of operations: small numbers of light vehicles will therefore be employed (such as armoured reconnaissance vehicles) if air transport is used, and more powerful means (such as armoured cars) if brought by sea.

To give an idea of the forces required, one company may be considered sufficient to control a departure area (with about two platoons) and a column (with a third platoon).

In this type of operation the organization of command and control takes on considerable importance. On national territory, command can only be assumed by the General Staff, which

maintains contact with the political authorities. Such areas as those under examination require a command unit of reduced strength but high-ranking enough to coordinate all the activities connected with the operation in collaboration with the Italian Embassy.

Particular attention must be paid to the communications sector, which is one of the factors upon which the success of the operation hinges. The Commander of the contingent must have a clear picture of the situation at every moment and be in a position to inform the national authorities of such needs and difficulties as may arise. Given the distances at which they may be called upon to operate, the units employed on this specific task should be equipped with adequate means of communication.



The planning of the necessary means for evacuation is hampered by the difficulty of determining the number of persons involved a priori. The choice should, however, be orientated towards the requisition of commercial carriers, since the military carriers will be required for the possible employment of the military component.

CONCLUSIONS

The repatriation of communities of citizens resident abroad for reasons connected with sudden changes in the local situation is a highly probable contingency, especially at present. It is not, however, equally probable that repatriation will take place in conditions of safety guaranteed by the presence of a national military contingent. Nevertheless, although unlikely, this situation is neither impossible nor one that can be overlooked.

It therefore follows that, in general terms, the operation

of repatriating citizens resident abroad must in any case be planned, with or without military intervention.

In concrete terms, it is necessary to identify the body to be given the task of drawing up evacuation plans. There is no doubt that the original problem is one of a diplomatic nature and that the military aspects are subsidiary, contingent and play a supporting role. The Embassies are therefore the most suitable places for the development of the relevant activities, also in view of the presence of military attachés capable of acting as intermediaries between the diplomatic and military authorities.

As regards the Ministry of Defence, it has already been mentioned that the need to provide protection for evacuation operations involving Italian citizens resident abroad is referred to in the "White Paper" in the context of the 5th

combined forces mission. The paper also points out that the best possible solution – already adopted by other European countries – is that of assigning this task to a combined forces unit of rapid deployment characterized by operational readiness.

As is now common knowledge, such a unit was recently created under the denomination of Rapid Deployment Force (FIR). The military component of any "repatriation operation" can thus be taken for granted. The remaining organizational aspects still need to be settled and finely tuned. To achieve this, it is necessary to stimulate the competent bodies to examine the problem and outline, albeit in very general terms, its place in the context of the general situation. The aim is to avoid being taken by surprise and left behind by the stream of events.

Gen. Angelo Sion
Col. Franco Monticone

REPORT ON THE EMPLOYMENT OF THE "LAGUNARI" UNITS

The Report belongs among the publications which, without making reference to specific organizational levels (combat group, minor complex, etc.) intend to tackle, from a prevailingly doctrinal point of view, the problems regarding special operational situations, environments or units. Among these, Publication no. 901 "Inhabited areas and Operations" and Publication no. 902 "Air-Ground Cooperation" have already come out; the publication on the "Employment of Airborne Troops" will appear soon. The Report describes, in general terms, the typical actions which can be developed in a lagoon environment or, anyway, in an environment suitable for the employment of amphibious units, leaving out, at least in part, the contingent organizational position of the amphibious troops, since, especially for the conduct of the most difficult actions, the "Lagunari" units will need adequate reinforcements. Within this framework, the publication, although concerning specifically the employment of amphibious troops equipped and trained for operations in their



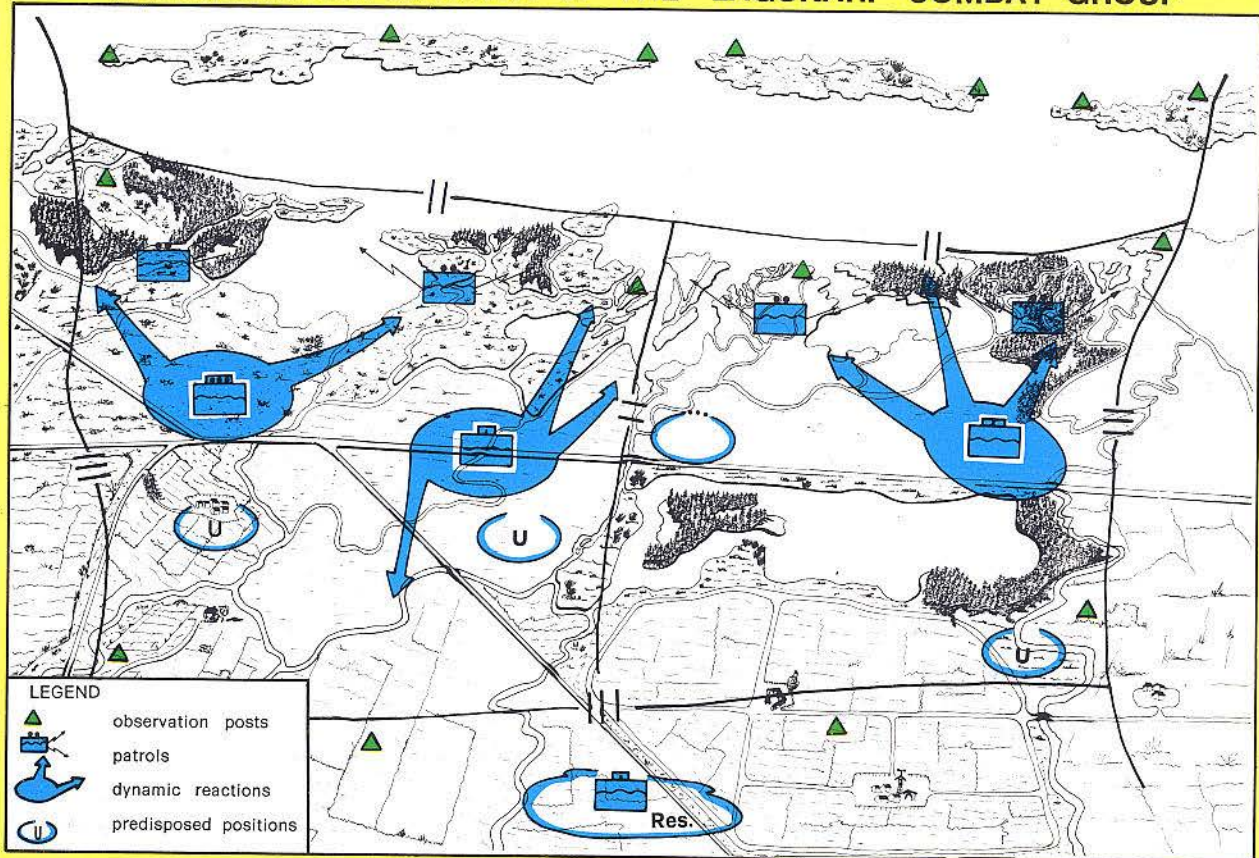
specific environment, outlines procedures that can also be applied by other forces employed in support.

The text, divided into three parts, outlines the characteristics of the amphibious units and envisages their employment in "typical" situations, the tactical and logistic aspects of which are closely analyzed. In describing the typical actions of the speciality, due consideration is given to the

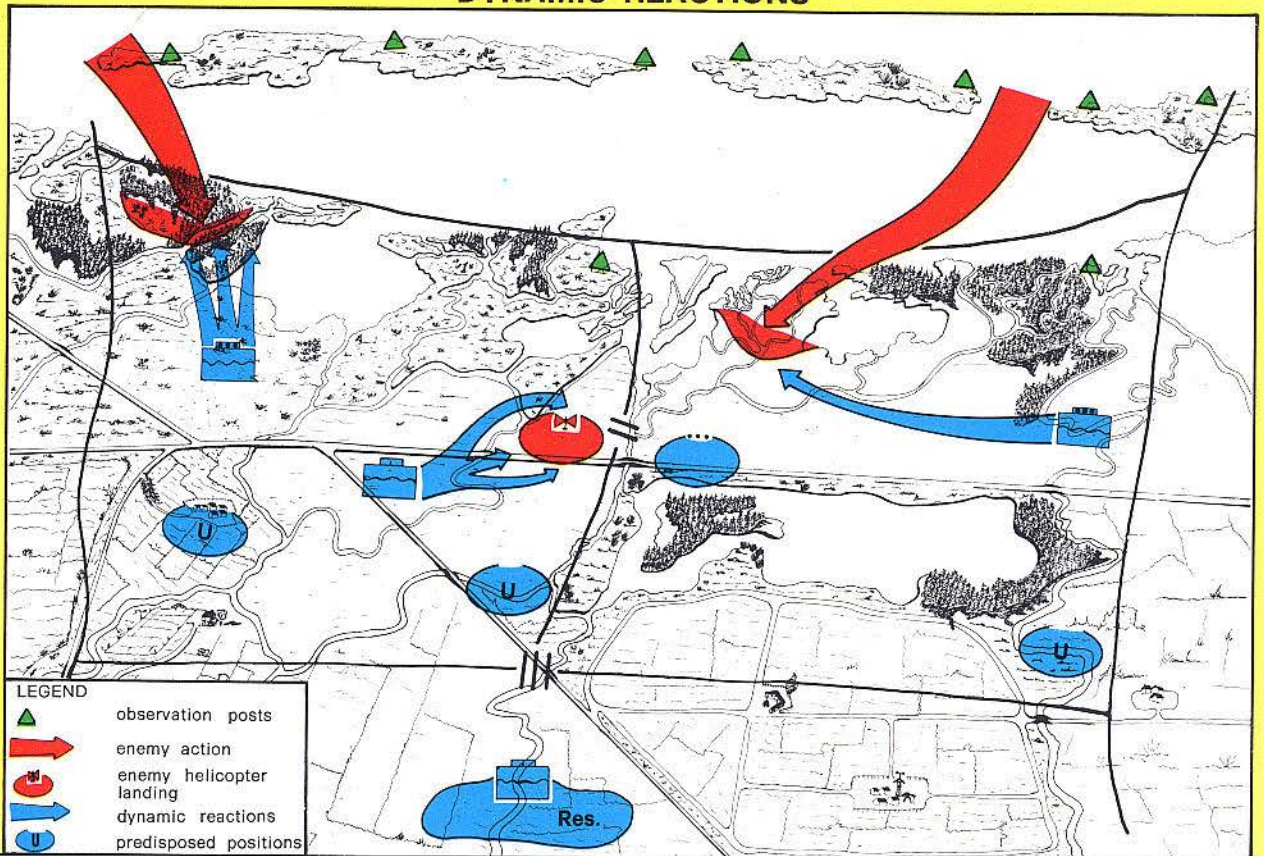
The "Lagunari" are characterized by the specificity of their training and recruitment as well as by the outstanding qualities of initiative necessary to face the situations of isolation in which the units may be called to operate.

impacts deriving from the employment of some special means, such as helicopters, motor-rafts, boats, amphibious tracked vehicles.

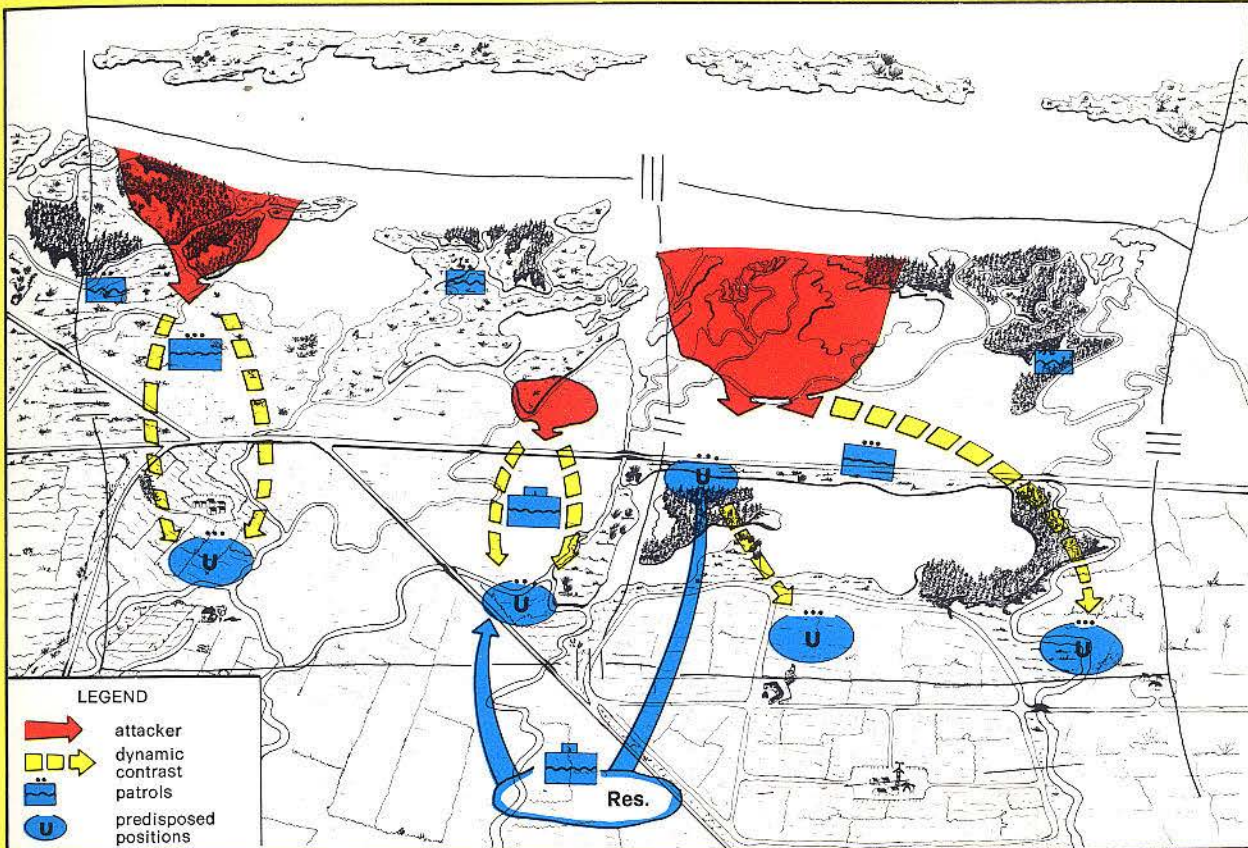
SCHEMATIC DEPLOYMENT OF THE "LAGUNARI" COMBAT GROUP



DYNAMIC REACTIONS



DYNAMIC CONTRAST



SCHEMATIC DEPLOYMENT OF THE "LAGUNARI" COMBAT GROUP

The "Lagunari" combat group is organized in units for surveillance, conduct of dynamic reactions, defence of positions and, if possible, for the constitution of a reserve.

DYNAMIC REACTIONS

The dynamic reactions, carried out when the enemy is approaching the shore, are aimed at preventing the enemy from completing the landing and from consolidating their position.

DYNAMIC CONTRAST

Should the dynamic reactions fail, an action of dynamic contrast is carried out, which aims at checking the expansion of the beachhead and buying time for the ensuing defence of positions.

PART ONE

The first part outlines the typical features of the "Lagunari" units, as well as their organic and tactical characteristics.

Three aspects are especially emphasized:

- the suitability to operate as **mechanized units**, according to the procedures described in Pub. no. 922 of the Doctrinal Series, "Employment of the Mechanized and Armoured Combat Group at Battalion Level", to which the Report refers as regards the actions carried out on land or, as amphibious units, in actions carried out in a lagoon or coastal environment;
- the emphasis placed on the **qualities of the fighter**, obtained also through a specific **recruitment and training**, as well as on the qualities of **initiative** of the **Commanders**, to whom **ample decision powers** must be

given, especially if the units have to operate in situations of isolation;

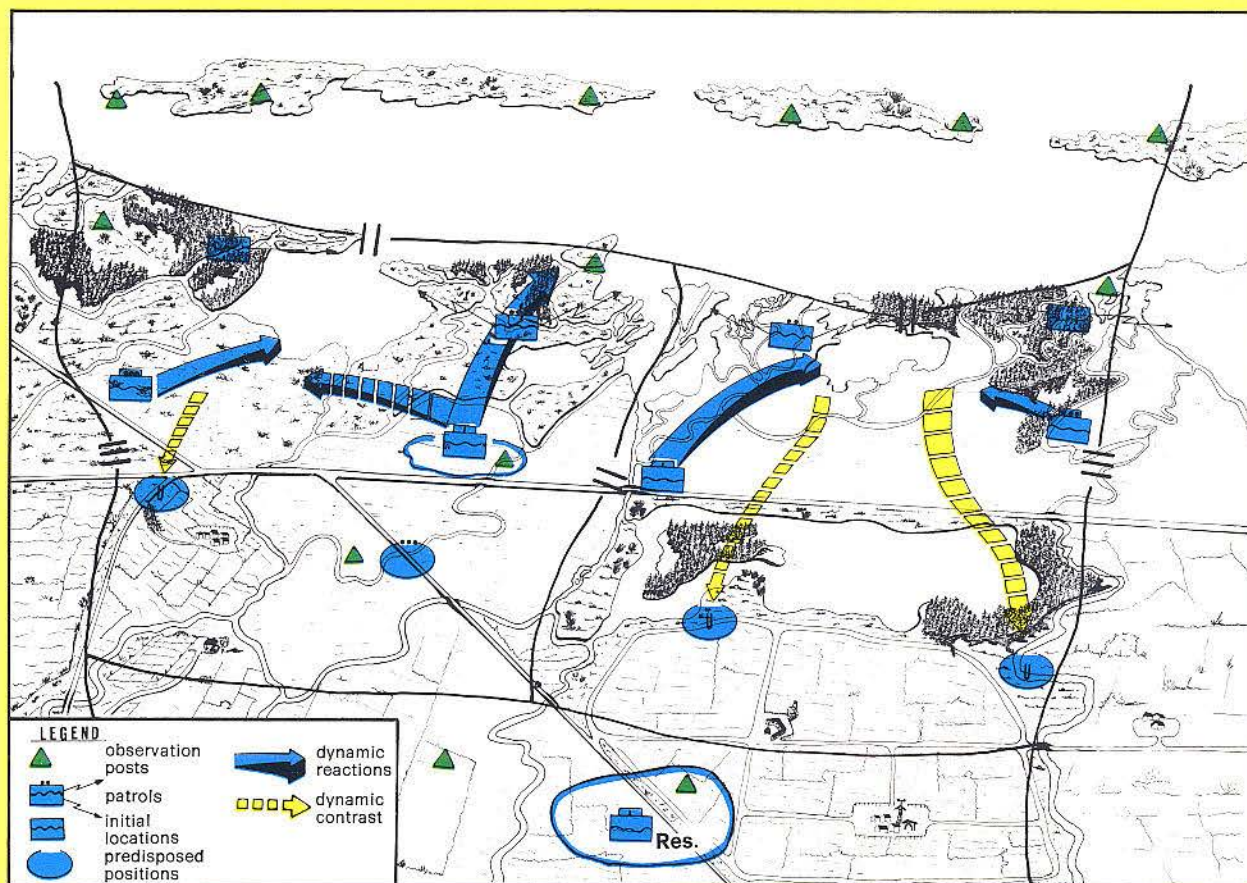
- the particular character of the possible **deployments** of the forces, in relation to the situation and to the features of the natural environment.

PART TWO

It is the fundamental part of the Report. It contains the chapters devoted to the employment of the amphibious units in specific situations, that is to say the defence of a stretch of shoreline, the amphibious actions of conquest and the amphibious coup de main.

In the **defence of a coastal stretch**, the task consists in ensuring possession of an area of particular interest, in order to prevent or hinder landings from the sea. The forces assume a very wide deployment, formed by several units tasked

DEFENCE OF A COASTAL SECTOR



DEFENCE OF A COASTAL SECTOR

The aim of the defence of positions is to restrain the adversary as a precondition for the conduct of dynamic reactions.

respectively with surveillance, conduct of dynamic reactions, defence of positions and, if the availability of personnel permits it, constitution of a reserve.

The duty of the **surveillance** units, made up by specialized elements drawn from the amphibious scout platoon or from the "Lagunari" platoons, is to avoid surprise, promptly detecting any forewarning sign of an enemy landing. The units entrusted with the conduct of **dynamic reactions**, at minor level, are positioned along the stretches more exposed to the risk of landings and intervene

as soon as the enemy approach the shore, in order to prevent them from completing the landing and from strengthening their position.

If the dynamic reactions do not succeed, the minor complexes charged with these reactions carry out an action of dynamic contrast, in order to check the expansion of the beachhead, funnel the adversary forces towards predisposed positions and gain the time necessary for the units, designated for this task, to occupy the positions that must be defended.

The units for the **defence of positions**, made up by minor "Lagunari" units, carry out a resistance which aims at restraining the enemy and, if possible, neutralizing their offensive capability, creating the preconditions for a counterattack, carried out by the preconstituted reserve or by units from the next higher

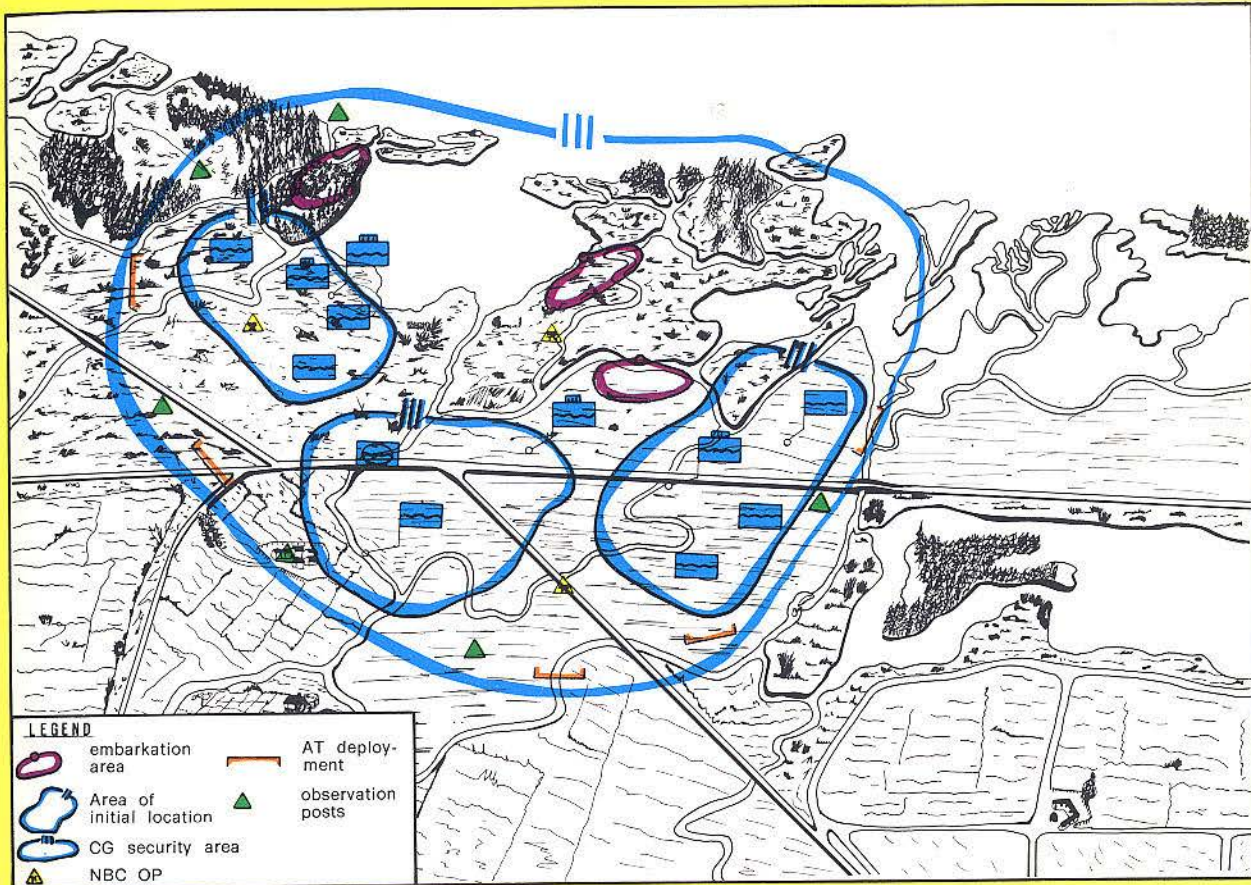
organizational level.

The **amphibious actions of conquest** are usually carried out in support of the main effort conducted by a Major Unit. They are of limited duration and are developed within narrow space limits. Their purpose is to acquire inland positions occupied by enemy forces, positions which are highly important for the development of an higher-level defensive or offensive manoeuvre. These operations entail the conduct of an after-landing action, in order to acquire an objective in depth which, as a rule, is held by the amphibious troops until they are rejoined by the friendly units.

An amphibious operation of conquest generally includes:

- preparation;
- approach from the sea;
- constitution of a beachhead;
- movement inland and conquest of the objective;

CONCENTRATION AREA



CONCENTRATION AREA

In the concentration area the units tasked with the amphibious action of conquest are set up and prepared.

- defence or at least control of the beachhead;
- reunion or handing over of responsibility or retreat and reembarkation.

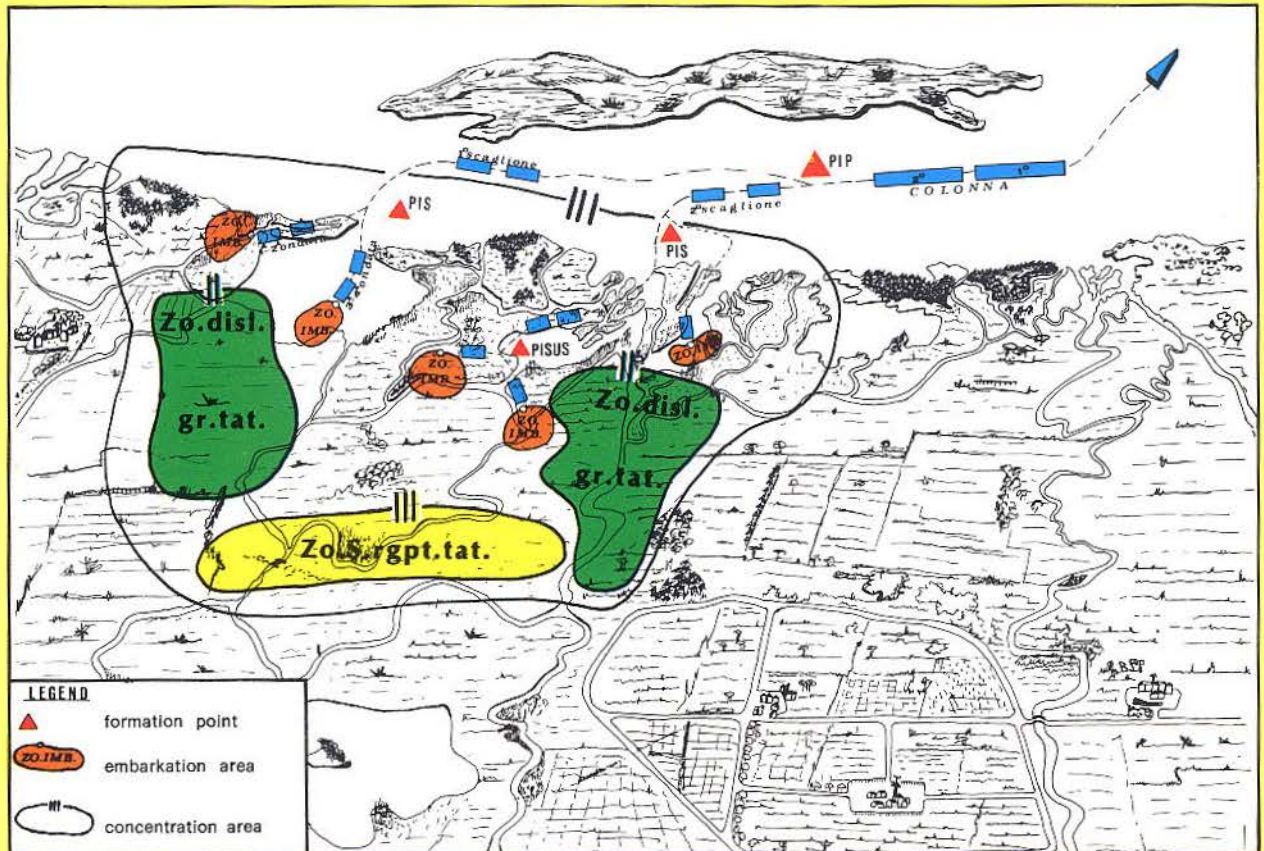
The preparation includes all the preliminary and organizational activities carried out by the units in a concentration area, in order to prepare and coordinate personnel and equipment for the subsequent employment.

The approach from the sea is the tactical movement from the concentration area to the line of departure of the amphibious attack.

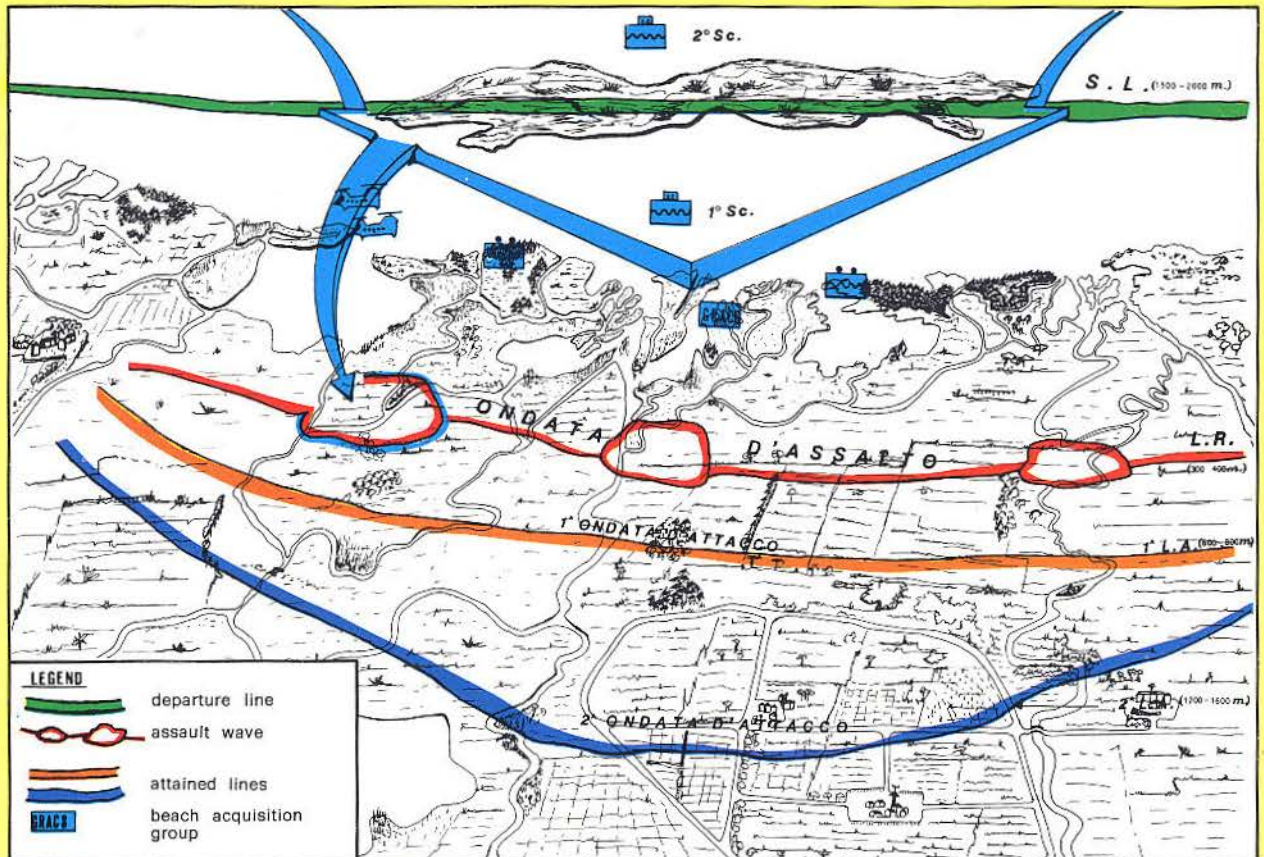
It starts with the **formation** of the combat group, which is divided into battalion-level echelons, within which the waves at minor-complex level move. The approach continues with the **navigation** from the friendly coast to the landing zone. The **beachhead is established** by means of an **amphibious attack**, which endeavours to conquer positions at a sufficient distance from the beach, so as to acquire the necessary space for the deployment of the units that are to carry out the following land action. On completion of the amphibious attack, the tactical group **proceeds inland** in order to **conquer its objective**. This action is usually carried out following the procedures described in Publication no. 922 "Employment of the Mechanized and Armoured Tactical Group at Battalion Level". The **defence of the beachhead** is aimed at ensuring a base, for a certain length of time, for the tactical

and logistic supply of the forces pushing towards the objectives in the interior and for permitting the entire tactical unit to reembark once the operation is completed, if the reunion with the friendly forces is not foreseen or impossible to achieve. To this end, the **consolidation** of the positions attained is effected on the fore margin of the beachhead, establishing a **temporary defence of positions** and constituting, if possible, a reserve for facing emergencies and developing a wearying and delaying action in front of the structures. The **reunion** and **handing over of responsibility** represent the normal conclusion of all amphibious actions of conquest. If the reunion is impossible or the entire operation has failed, the combat group makes a **retreat**, which ends with the embarkation on the landing craft and the return by sea, or with the

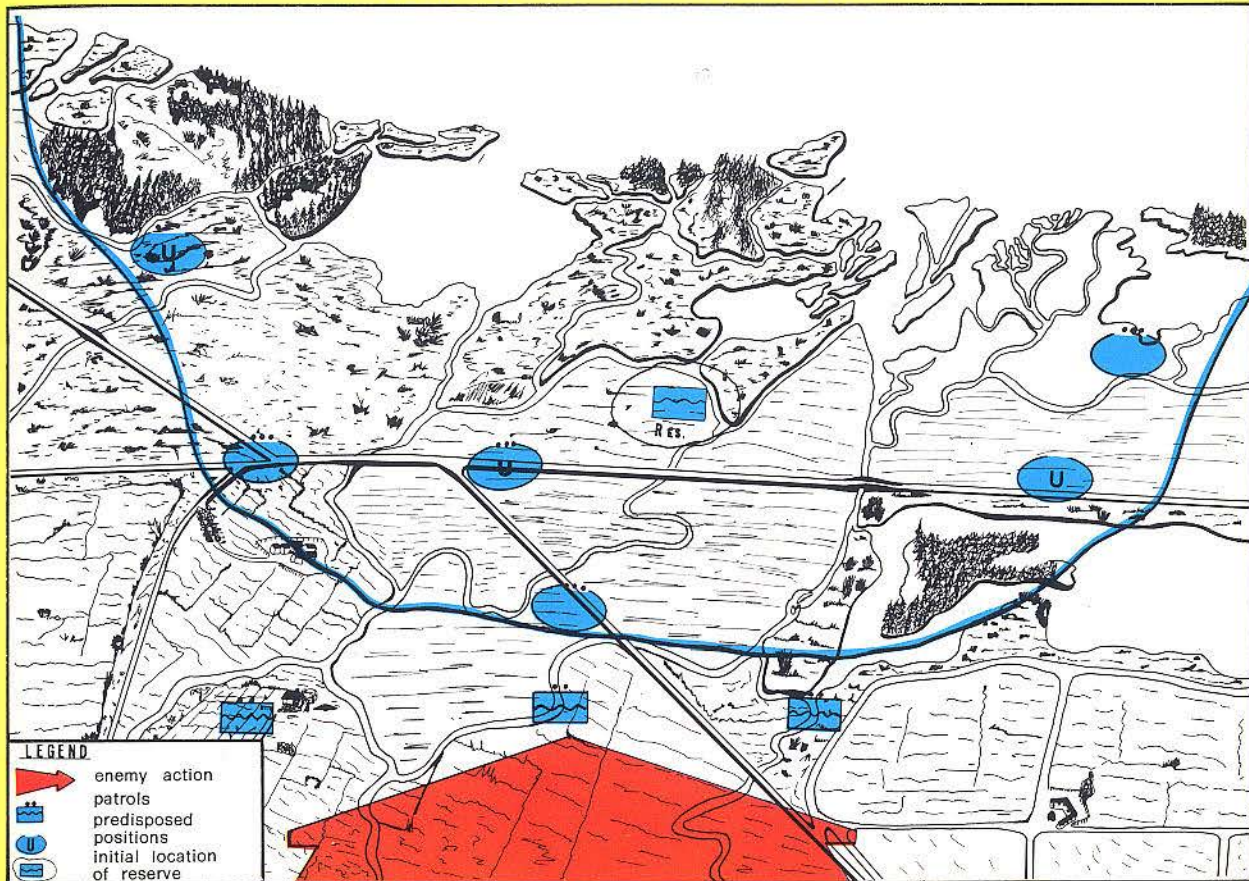
FORMATION PROCEDURES



AMPHIBIOUS ACTION OF CONQUEST



DEFENCE OF THE BEACHHEAD



FORMATION PROCEDURES

Adopting a formation, the combat group deploys for navigation, with an organization in echelons and waves.

AMPHIBIOUS ACTION OF CONQUEST

The amphibious action of conquest consists in the constitution of a beachhead and in the subsequent land operation.

DEFENCE OF THE BEACHHEAD

It is carried out by consolidating and temporarily defending the positions on the edge of the beachhead.

transfer to a zone controlled by guerrillas.

The **amphibious coup de main** is a typically offensive operation essentially based on surprise and marked by boldness, rapidity of execution, limited duration and particular violence.

In most cases, it is intended to:

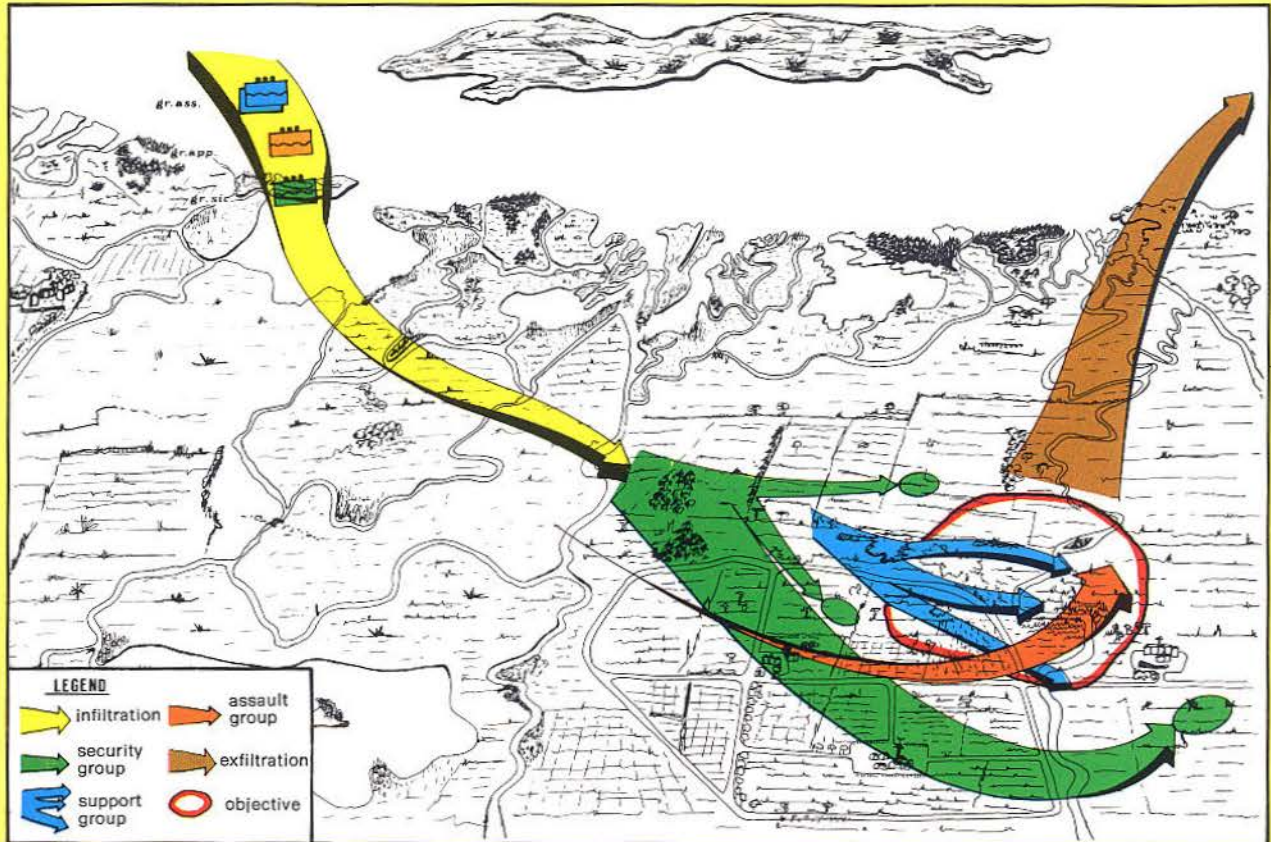
- diminish the adversary's operational capabilities, through the destruction or neutralization of important military objectives on the territory occupied or controlled by the enemy;
- gather information;
- engage the enemy forces, distracting them from other tasks;
- set the preconditions for the development of a subsequent operation of conquest.

The primary objectives of the coups de main are: command posts, surveillance stations,

depots, missile sites, airport installations, active elements of coastal or antiaircraft defence, naval plants and facilities, communication centres and positions of high tactical importance. The execution is generally entrusted to a limited number of forces, which can vary from teams of specialized men to sizeable units which, nevertheless, are never larger than a "Lagunari" minor complex.

In the first instance, the action is carried out by surprise and in a specialistic way; in the second, the action involves combat, in order to reach the preestablished aim, and implies a division of the forces into sections, the number of which depends on the tasks they have to accomplish. These sections are made up by one Command team and one or more security, assault and support groups.

AMPHIBIOUS COUP DE MAIN



AMPHIBIOUS COUP DE MAIN

The unit, penetrated into the enemy territory, completes its task and then, with a quick and violent action, disengages itself and filters out.

of the "Lagunari" and amphibious battalions. This zone is called **tactical group service zone**.

This part includes also an outline of the characteristics assumed by the logistic organization in the various situations of its typical employment (defence of a stretch of coastline, amphibious actions of conquest, amphibious coup de main).

to organizational contingent situations which, inevitably, would keep the development of the reasoning process within too narrow limits. The doctrine, in fact, must supply that indispensable broadness of vision, which is at the foundation of the education of the Cadres. The Cadres and, most of all, the Commanders at the various levels must, in their turn, interpret the general directions and adapt them to the specific cases, taking from them the suggestions useful for the training and employment of the units under their command.

Above all, it must be remembered that the description of whatever typical operation, even if essentially meant for the speciality most suitable for conducting it, can often be developed – as numerous historical references confirm – by other forces trained for the purpose.

PART THREE

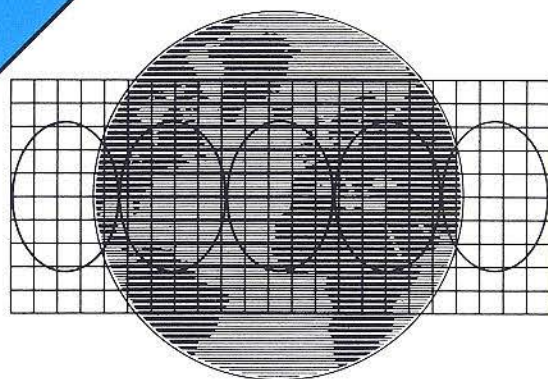
This part is devoted to the logistic organization of the amphibious troops, which, in general terms, follows the one indicated by Publication no. 922 for the mechanized units.

The only differences consist in some characteristics of the amphibious battalion's logistic organization regarding the activity of watercraft maintenance and the deployment in a single area of the executive organs

CONCLUSION

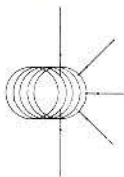
The Report represents, in the general mosaic of the publications related to the various specialities of the Combat Units, a further element of the 900 Doctrinal Series. As mentioned in the foreword, we purposely chose not to link the norms strictly to the specific establishment levels, in order to avoid linking the description of these operations – which assuredly have an ample scope –

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ANTIAIRCRAFT DEFENCE AND SELF-DEFENCE





To foresee with sufficient accuracy the trends and ways of development of a future conflict is no easy task and this has been confirmed by the repeated tragic failures of the past. Shortly before the first world conflict the General Staffs had envisaged a manoeuvred campaign of movement, which in reality took on immediately the characters of a war position, practically spent in the trenches, owing to the wide employment of barbed wire entanglements and machine guns.

The second world conflict had been foreseen mostly as a war of position, and this point of view was confirmed by the fortified defensive lines that were set up. What developed was a war of movement and manoeuvre, hinged on tanks and airplanes, with rapid excursions into many theatres, from North Africa to the Sarmatian plains and Central Europe.

To envisage the features of a future conflict today, even excluding the employment of nuclear weapons, is more difficult still, both because no worldwide conflict has broken out in the last forty years and because of the more and more rapid development of technologies and armaments.

Reining in the imagination and taking into consideration the near future, one can reasonably surmise that a conventional war will be mostly based on armoured means and aircraft, the latter being represented not only by airplanes but also by helicopters, which play an increasingly decisive role due to their flexibility and multiplicity of employment.

It ensues that the air-land battle will lay more stress on the integration of these two components, whose predispositions and capability of working together, in the spirit of an open and genuine interservice mentality, appears to be an indispensable condition for attaining positive and concrete results.

Therefore the defence (and a possible intervention from



Italian-made 25 mm four-barrel, self-propelled antiaircraft system.

our part could only have this connotation) will have to rely mostly on the effectiveness of an instrument in which the air and land components are perfectly integrated.

The air defence systems, incorporated into an organization, which in the present context must perforce be interservice (manned interceptors, long, medium and short range missiles, guns) essentially aim at forestalling the enemy threat in time and space, preventing the occurrence of the offence and extending their protection over the entire area they must defend.

Antiaircraft defence, instead, is aimed at countering the air attacks against the forces in action, which are carried out at very low altitude and marked by surprise and by the highest

speed permitted by the mission. The defence is based on very short-range weapon systems and is predisposed and developed within the relevant Service against visually detected enemy aircraft, which have already shown and concretized their offensive attitude. In other words, it tends to hinder and possibly break up the adversary offence, at the moment of its occurrence or after it has already hit the objectives.

Within this framework, anti-aircraft self-defence has some features in common with antitank defence, such as direct aiming, fire distribution with preselection of the most dangerous objective, prompt action within an extremely short time.

Also the four fundamental parameters of antitank defence (density, depth, effectiveness and protection) can be easily adapted to antiaircraft self-defence.

Density has a determinant influence, as the last Arab-

Israeli conflict (1973) shows. In that war Egypt, precisely thanks to the large availability of antiaircraft weapon systems, unexpectedly achieved air superiority on the Canal and the Sinai bridgehead. Of course this favourable situation is unlikely to recur and be applicable to the operational theatres of a general conflict, also owing to the extremely high costs of antiaircraft weapon systems, even for mere self-defence.

Depth is essentially affected by the high speed of the attacking aircraft and by the possibility to produce the offence at a distance. Consequently the aircraft must be, first of all, promptly detected, acquired and identified by the antiaircraft defence units, which have better possibilities of distant interventions and, successively, by the self-defence weapons in the vicinity of the objective.

Effectiveness, which is essentially determined by the



Hawk missile. The weapon is propelled by a solid-fuel rocket, and can reach a speed of Mach 3 plus.

technical-ballistic characteristics of the weapon systems, can be improved remarkably with the coupling of short-range anti-aircraft missiles with automatic light guns that complement the action of the missiles – which, at short distances, are conditioned by the initial inertia of the guiding systems – and, at the same time, ensure a continuity of reaction also in case of intense electronic jamming.

Protection, besides being generally entrusted to electronic countermeasure devices, must rely on the dispersal of the weapon systems (compatible with the density required), on their concealment and on the timely occupation of alternative positions.

Today, self-defence at low or very low altitudes is vitally

important for the land units, because not only does it improve the liberty of manoeuvre but represents a significant guarantee of survival.

In substance, self-defence differs from anti-aircraft defence proper not only in the characteristics and performance of the weapon systems at its disposal, but also – and above all, I should say – in the models of intervention of the systems.

The difference between the two actions, anti-aircraft defence and self-defence, becomes clear and stands out with greater evidence if one considers to what extent these actions depend upon the NATO IAD Tracking and Control System. In fact the goal must be our integration with the centralized tracking and control system, in order to provide, through coordinated interventions, the necessary security to the friendly aircraft and a better distribution of the objectives among the

weapons in a position to intervene.

On the other hand, this integration is not always feasible with the self-defence systems distributed among the units, since their action against direct attacks usually appears to be more effective if it is carried out promptly, even if autonomously.

The problem of command and control for the weapons of the anti-aircraft defence proper has clearly different aspects. Failure to integrate them in IAD can entail their non-authorization to fire, for they could be cut off from the flow of information necessary, among other things, to avoid shooting down friendly aircraft and overkilling.

Such substantial differentiation in the employment of anti-aircraft defence and self-defence weapon systems requires that they be clearly distinguished, in order to be assigned a correct position in the organization.

In fact, the actual anti-aircraft defence systems find in



Launching of an "Aspide" anti-aircraft missile.

centralization the most advantageous conditions for joining the IAD tracking and control system, which is a necessary prerequisite for the accomplishment of their task.

Centralization is moreover always economically convenient in a condition of permanently limited availability of resources and is also recommended by the characteristics of the national operational area which is divided into two distinctly separated environments, one of which, that of the plain, presents the limited dimensions of an Army Corps sector. Finally, one must not overlook the possibility to employ, through centralization, the existing anti-aircraft organization, which assembles expert and specifically trained cadres, rather than distributing complicated and sophisticated systems in an environment hardly prepared to receive them and not yet able to use them properly.

As far as self-defence is concerned, it seems possible – and even expedient – to decentralize the weapon systems among the operational units which, in this way, can ensure, also when isolated, their own liberty of action and the direct protection of Headquarters, transport and combat equipment, logistic formations, etc..

Also peacetime training deserves particular attention. In consideration of the envisaged, short-term acquisition of defence and self-defence weapon systems, it is impossible to disregard the importance of rebuilding that widespread and confident anti-aircraft outlook which has been dormant for some time.

The options in this field must look at the concrete and rely on what is existing and tested, without wanting to forget the experiences of the past, which saw the anti-aircraft battalions of the artillery regiments consigned to the lowest place in the scale of the general consideration.

The forthcoming self-defence anti-aircraft units, be they batteries for the Brigades

or battalions for the Army Corps – must be given a good start, entrusted to confident and well-trained Commanders and Cadres and be established in an environment which, being capable of guiding and supporting them, considers these units an essential tool in the economy of combat, on an equal standing with the antitank component.

Rinaldo Santini



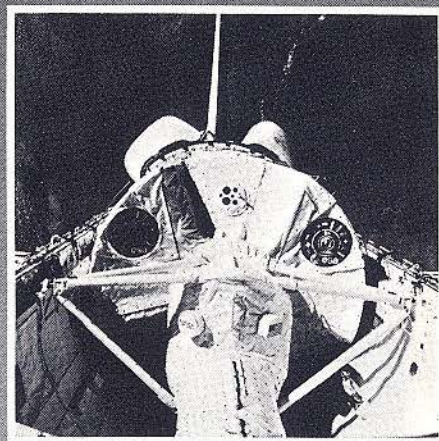
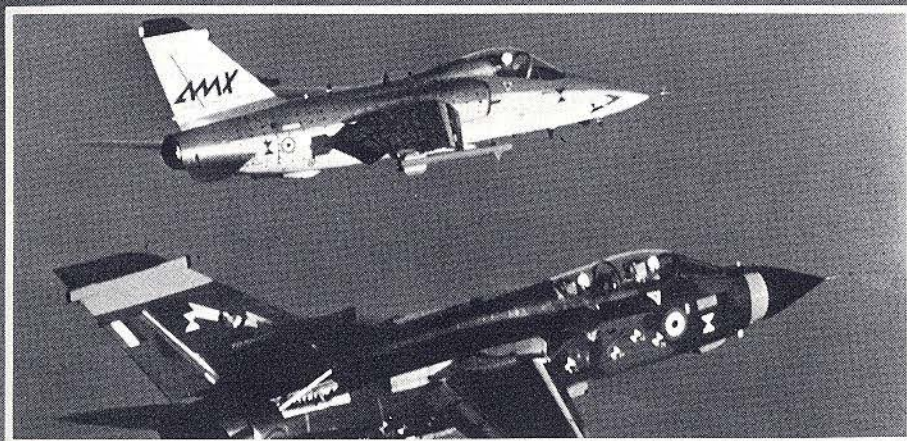
Major General Rinaldo Santini has attended the 8th Course of the Military Academy, the Application School, the 87th Course of the War College and the 16th Joint Staffs Course.

Gen. Santini has been Commander of the 3rd battalion of the "Ariete" 132nd Armoured Artillery Regiment; subsequently, he commanded the 132nd Regiment and the "Mameli" 32nd Armoured Brigade.

As General Staff Officer, Gen. Santini has been on duty at the Headquarters of the "Ariete" Armoured Division, the Army General Staff and the War College.

He has been Chief of Staff of the "Folgore" Mechanized Division and of the III Army Corps. Since October 1984, Gen. Santini has been Commander of the Army Anti-aircraft Artillery.

LOOKING FORWARD.



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THE MILITARY ACADEMY

Past, present and future



The Palazzo Ducale, which houses the Military Academy, dates back to 1634 for the earliest stages of construction. It was built for Duke Francesco I d'Este, according to the plan of the architect Bartoloméo Avanzini and under his supervision, over the foundations of an old castle built by Obizzo II, the Marquis of Ferrara, when he became lord of Modena. Subsequently rebuilt by Obizzo III, with improved comfort and fortification, the castle served as quarters for the city governors until, with the "devolution" of Ferrara to the Pope in 1598, the d'Este family moved to Modena which became the new capital of the d'Este Duchy.

Francesco I undertook the building of the new palace, where he intended to renew the splendour and pomp of the Court of Ferrara, after his predecessors had tried in vain to restore and extend the old castle. Avanzini's original plan was modified to embody a number of suggestions by Bernini, Borromini and Pietro da Cortona and was carried out only in part. Paradoxically, the building of the sumptuous palace was only concluded many years after the d'Este dukes left the lands of Modena and had been granted comfortable conditions of refuge in the Austrian empire.

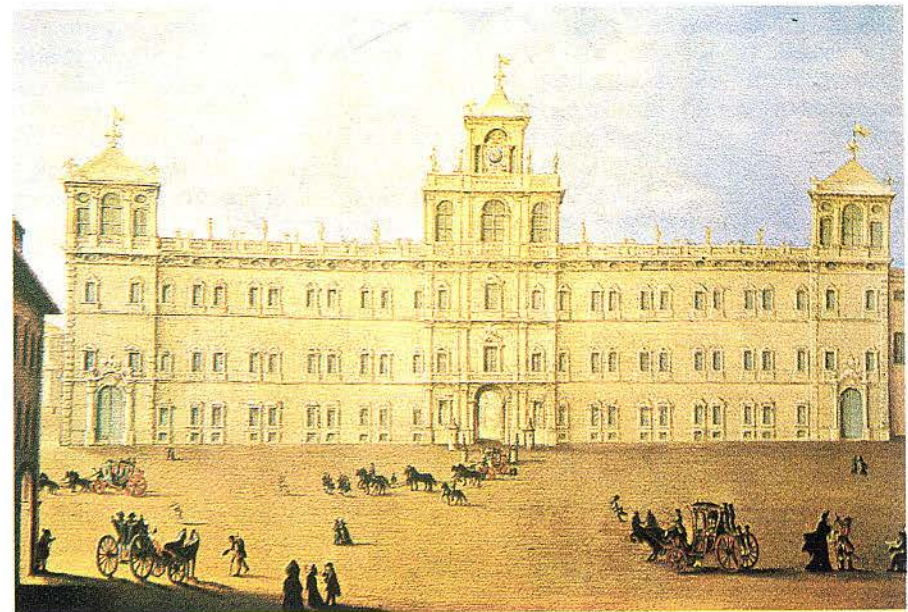
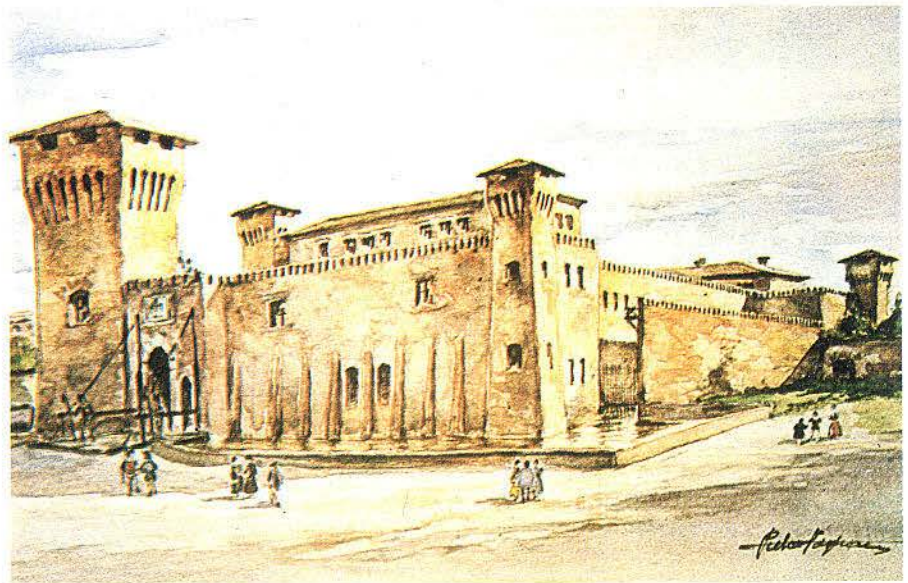
The construction work actually lasted three centuries, and it was only on the eve of the second world war, in 1939, that the west wing which stopped short to the north of the royal staircase, now the Grand Staircase of Honour, was completed.

During all this time, slack periods resulting from the financial difficulties that

occasionally assailed the small Duchy (and which led to the unfortunate sale of 100 masterpieces from the ducal art gallery to the Museum of Dresden in 1745) alternated with those moments of real artistic magnificence and generous patronage that led to the completion and enhancement of the building. The most striking contributions to this work were offered by: Francesco II, who completed construction of the east wing, the facade of the central tower, and the first floor of the west wing; Francesco III, responsible for the construction of the "Salottino d'oro" (the Golden drawing room), which

reflected his taste for wealth and splendour with true refinement, in 1756; and Francesco IV and Francesco V, who completed the inner gallery (1842), the eastern facade overlooking the gardens, and the western facade.

In 1860 the Palace was confiscated by the Savoia family; two years later, they handed it over to the State to house the Military School which had been founded in Modena under the auspices of General Manfredo Fanti. The cadets' dining-hall was built in 1862 in the as yet incomplete eastern part of the Palace where a wood-shed used to stand at the time of the



Left.

A cadet training with a 155 mm gun.

Above right.

Obizzo II's old castle.

Below right.

The facade of the Ducal Palace
(from an 18th century painting).



Giovanna Battista of Savoia-Nemour.

whether the building could still be used for the academy courses; with its tottering structure, the building was beginning to show its age. Moreover, it hardly matched up to modern criteria of functionality. Nevertheless, it was decided to remain in Modena, and in the same building, despite all the obvious inconvenience inevitably caused by holding courses and carrying out restoration work at the same time.

Work began in September 1975 and is still in progress. The following is what has been done so far:

- restoration of the main entrance on Piazza Roma and the opposite entrance on Piazzetta Cavour, to ensure structural stability;
- bracing along the main crack;
- the horizontal and vertical structures have been lightened and restored to ensure stability;
- modifications in the restored parts to improve functionality, including outstanding improvements in the Montecuccoli barracks, where a number of bedrooms with services, providing decent accommodation for about 600 cadets, have been built without altering the architectural features of the outer and inner facades.

Dukes. Right of way across the courtyard, which the d'Estes had permitted by day and the dictator, Farini, by night too, was now rescinded. 1888 saw the construction of the covered passageway connecting the main building with the former Salesian monastery, now the Montecuccoli barracks; the passageway can still be seen today.

During the second world war an air-raid destroyed part of the recently completed west wing, and the Palace suffered further damage and impoverishment as a result of the German military occupation and sub-

sequently, when evacuated families were lodged in the building.

This stately building, with its long, chequered history of construction, had not however reached the end of its structural problems. The earthquake that shook the Adriatic seaboard and Ancona in 1972, together with the subsidence affecting all the oldest, heaviest buildings in the town-centre, played havoc with the structure of the Palace, opening a large crack across it from north-west to south-east.

This crack and the consequent loss of static equilibrium raised serious doubts as to

HISTORY

When a national army offering a reliable substitute for the mercenary troops that had hitherto been entrusted to defend the state's independence from the major European powers came into being, Duke Carlo Emanuele II, the ruler of Piedmont, decided to found an Institute for the professional training of the new Army's officers.

Thus, in 1669 the idea of an Academy was conceived; it was to be a study and training centre for all the future leaders of the small state of Savoy –

ministers, ambassadors, top functionaries and future officers.

A few years later work began on a large building to house it. The Duke's architect, Amedeo di Castellamonte conceived the plan. The death of Carlo Emanuele did not halt progress, which was in fact encouraged by his widow, Madame Reale Giovanna Battista of Savoia-Nemours, who acted as Regent until her son, Vittorio Amedeo II, came of age.

On January 1st 1678 the small state of Piedmont, which had developed warlike traditions in the face of the territorial greed of France, Spain and Austria, took the lead over these far more powerful states and, indeed, over the rest of the world, by inaugurating the "Reale Accademia di Savoia". The statutes were sent to all the Courts of Europe, and from them came the heirs to noble families, princes and "a motley crew from every corner of the earth, mainly English, then Russians, Germans, and Italians from the other states", as Alfieri, himself a cadet at the Royal Academy between 1758 and 1766, described them.

Military training took priority in the institute's programmes, even though the aim was the preparation of the leaders of the state. Programmes included the study of "military manoeuvres" and training in the attack and defence of fortresses. There were even plans to build a fort for this training.

It appears that the fort was actually built, as an engraving at the Turin Application School shows the "Encampment and Attack on the Fort of the Royal Academy of Savoy, established in Turin".

The date given for the exercise is May 1st 1681, and the engraving clearly shows a fort like a 5-pointed star in plan, the Headquarters where the "Signori Accademisti" were

encamped, the platform from which Their Royal Highnesses were to view the exercise, and the tent of the Marquis of San Germano, Grand Equerry of Savoy and Superintendent of the Academy.

The first officers turned out by the institute had their baptism of fire in the battle of Turin, in 1706, with victory over the French army. As the French retreated, Prince Eugenio's march was played; this piece of music subsequently became the Royal Academy's official march.

The first reorganization of the institute to improve the training of officers was undertaken by King Vittorio Amedeo II in 1729. Subsequently, in 1756,

cadets received a training course geared exclusively to their requirements, while theologians and top functionaries had their own classes with more suitable instructions.

In 1798 the French, who had occupied the state of Savoy, suppressed the Royal Academy. 120 years had passed since the founding of the Academy and, despite the generally negative outcome of the clash between the Sardinian Army and Napoleon's troops, the officers of the Piedmontese army trained there had earned the merit of being the only army of the Italian States to defend the frontiers against the French for four long years, thus outdoing



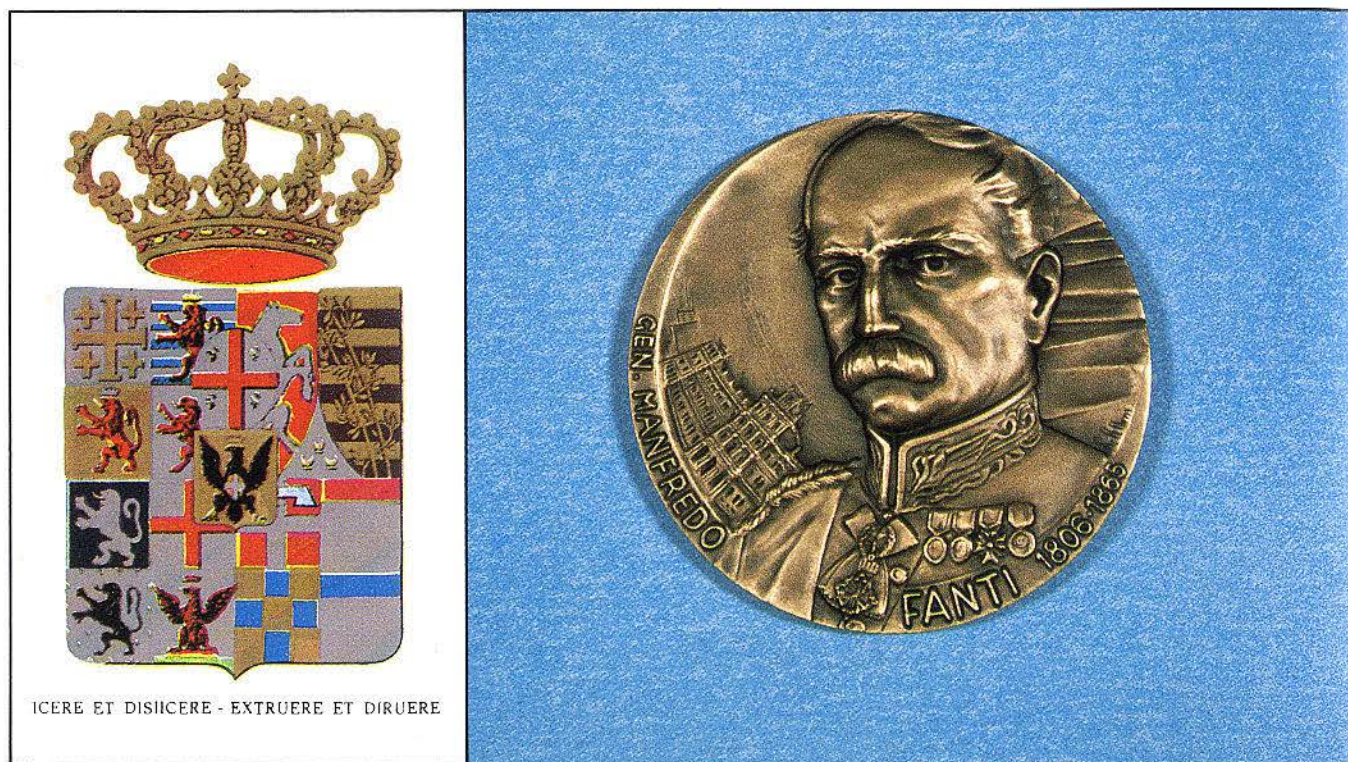
Egia Celsitudo Sabaudia Ducum hoc toto Administrationis suae tempore, attente, studiosèq; persequens, quaecumque Regalis Filij subditis profutura sunt, nihil credidit opportunius se, nihil gratius Nobilitati potissimum praestare posse, quàm si Academiam in hac Vrbe instituat Disciplinarum omnium, quibus Animi virtutes, & Corporis ingenio Adolescente dignè comparantur. Monitos itaque voluit, invitatosque Nobiles externos, ut huiusce institutionis beneficio uti possint, quod sciat, praeter consuetas Academicæ exercitationes, illud etiam commodi in hac Vrbe habituros, ut elegantiam, decoremque agendi paulatim hauriant ex vfu, & familiaritate huius Aulæ, quæ sane tum pugna, curfuq; equestri, tum Chorearum ducendarum arte, ceterisque huiusmodi solemnibus spectaculis inter Europæ elegantissimas semper numerari meruit.

Prima sequentis anni 1678 dies Academicæ initium dabit. Discant Academici Domiturae Equestris Artium: discant insuper ad Annulum, atq; in statarium Pugilem decurrere, & cætera id genus hasiludia: præterea, & numerose saltare, & ludieris ensibus dimicare, & in equo ligneo in gyrum circumagi ex arte: ad hæc in Mathematicis, in Graphidos scientia, in rei Bellicæ palæstra exercebuntur. Atq; ut facilius percipiant, vfu ipso docente, quæ ratione oppugnari, defendiq; debeant Arces, irruptione fiet in Castrum, quod in hunc vsum erigetur, eiusq; defensio. Huc accedet Historiæ, Chronologiæ, Geographiæ studium, Scutarie tesseræ peritia, & Linguarum, Italianæ præsertim, & Gallicæ, quæ Taurinorum Aulicis, tum Civibus familiarissimæ sunt.

Harum omnium Disciplinarum Magistri ex optimis sane delecti sunt: ij scilicet, à quibus Regia ipsa Celsitudo debet institui. Dux quippe in eadem Academia, quæ proinde in vno ex Regalibus Palatijs instituitur, se se cum cæteris exercebit.

Moderator Academicæ, qui vir erit proculdubio magni nominis, & auctoritatis, exiget à singulis Academicis, qui vnicum famulum habuerint, annuas Hispanienfes centum Duplas: præter quas decem semel quisque in ipso ingressu numerabit. Hoc prælo singuli habitationem, & alimenta habebunt, omnesque, quotquot supra numeratæ sunt, facultates, & artes addiscant. Quod si aliquis Moderatorem forte suum, aut maiorem servorum numerum secum haberet, illi, habitæ ratione prioris summae, augebitur pensio. Taurini r. Septembris 1677.

Decreto Istitutivo dell'Accademia Reale di Torino.



Above.

Crest of the Engineer and Artillery Academy of Turin.

Right.

General Manfredo Fanti on a commemorative medal (by the sculptor Romano Pelloni for Alberto Lodi of Carpi).

some much larger European armies.

The eclipse of this training school, the first of its kind in Europe and forerunner of today's Military Academy, did not last long. Immediately after the Restoration, with the decree of November 2nd 1815, Vittorio Emanuele gave his sanction to the founding of the "**Regia Militare Accademia**". Castellamonte's splendid building, which had housed the Royal Academy of Savoy for over a century, was again used for these activities.

There were two big innovations in the Piedmontese institute: firstly, it was dedicated entirely to training army officers and so had a more peculiarly military nature, as the name suggested; and secondly, subject to the King's approval, citizens of lower social origins could attend its courses.

The number of cadets was fixed at 200, 75 being "alunni" whose expenses were borne by the state and 16 "Paggi d'Onore del Re", who received grants from the Royal Household. The length and type of training varied according to the service chosen: admission was from the age of 9 to 12, and after 8 years the Infantry and Cavalry cadets were commissioned as 2nd lieutenants. Courses were a year longer for cadets of the General Staff, Artillery and Engineer Corps, who were commissioned as lieutenants.

Throughout the period leading up to the campaigns for the unification of Italy, the battle-hardened Sardinian Army with its 5 divisions and approximately 70,000 men benefited from the large numbers of officers trained in that old building overlooking what is now Piazza Castello, in Via della Zecca. Here fluttered the first tricolour Flag which Carlo Alberto granted the institute in 1849 to replace the flag with a white cross on a red background which he had given the school on August 13th 1840.

The regulations underwent many changes in a relatively

brief period of time (1815-1860), all aimed at raising the age of admission so that cadets entered with sounder education and greater maturity. The minimum age was first raised to 14, with 5 years' training for Infantry and Cavalry and 6 for the other Arms, and then, in 1857, to 16, and on condition that cadets had already received the "licenza di retorica". Courses were reduced to three years for cadets intending to enter the line Infantry and four years for those preparing for "Special Corps".

The process of national unification, which had developed great impetus after the 1859 Campaign, accompanied by plebiscites and admissions, led to the growth of the Sardinian Army and this in turn was reflected in the activities of the Regia Accademia Militare which could no longer meet the demand for officers. As early as 1859 it was decided to institute a supplementary course at the Military School of Infantry in Ivrea, but this proved insufficient and just one year later, on March 13th 1860, General Manfredo Fanti, the War Minister, presented for royal approval a decree instituting

three separate courses* for the training of officers for the Infantry, Cavalry and Special Corps (General Staff, Artillery and Engineers).

Infantry officers were still recruited through a Course "Supplementary to the Regia Militare Accademia" established at the Military School for Infantry in Ivrea. The minimum age for candidates was fixed at 19 (Royal Decree of March 13th 1860).

"At the Military School for Cavalry in the city of Pinerolo a course has been instituted to supplement the Military Academy. It shall provide the young men with the necessary training to become 2nd lieutenants in the Cavalry..." (Section 2 of the Royal Decree).

"At the Regia Militare Accademia admission shall no longer be granted to candidates for the position of 2nd lieutenant in the Infantry and Cavalry, while a new course shall be instituted for the training of young men to become officers in the Royal Artillery and Engineer Corps..." (Section 3 of the R.D. of March 13th 1860).

However, this was a period of great upheavals, the institutions were evolving and the territory expanding, and supplementary courses to train officers could not be restricted to Piedmont alone. Thus the War Minister, General Fanti, the 180th anniversary of whose birth his hometown, Carpi, has recently celebrated, decided to found a Military School in Modena. At first supplementary courses for Infantry officers, like those held in Ivrea, were provided, subsequently being extended to cover the same range as the courses at Pinerolo. By 1865 it was the only institute for the recruitment and training of Infantry and Cavalry officers for the Royal Italian Army.

The choice of Modena did not depend on chance or provincial loyalty (Carpi, Fanti's

hometown, lies a few kilometres away from the capital of Emilia); it was determined by geographical criteria – not only Piedmont but the whole of Italy was to contribute to the growth of national institutions like the army – but above all in recognition of the town's patriotic traditions, as it already had a renowned University and Institutes for military studies.

In fact, the city's "**Accademia Militare degli Estensi o conferenza di Architettura Militare**" dates back to the Duke Francesco III in 1757. Here training courses were held for the officers for a small army (at its height it had 5 regiments: "Reggio", "Modena", "Mirandola", "Frignano" and "Garfagnana") that was, however, efficient, disciplined and devoted to its sovereigns; in fact, the "Reale Ducale Brigata Estense", with little more than 3,600 men, followed solidly behind the sovereign of Modena, Francesco V, out of sheer devotion, when he left the city for Austria's more hospitable embrace, leaving family and property behind in his Duchy.

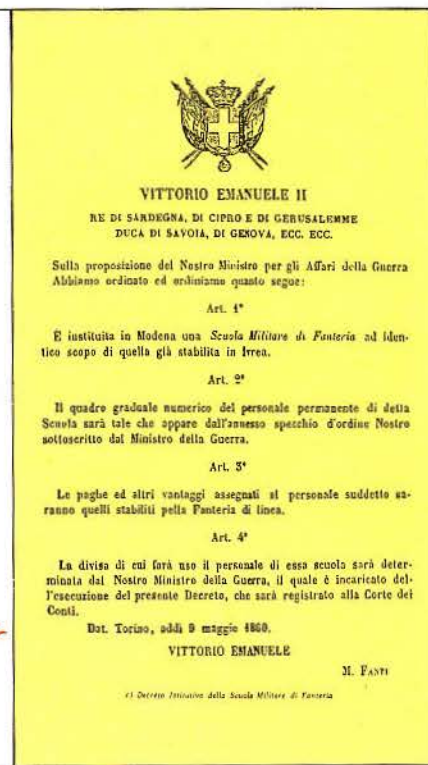
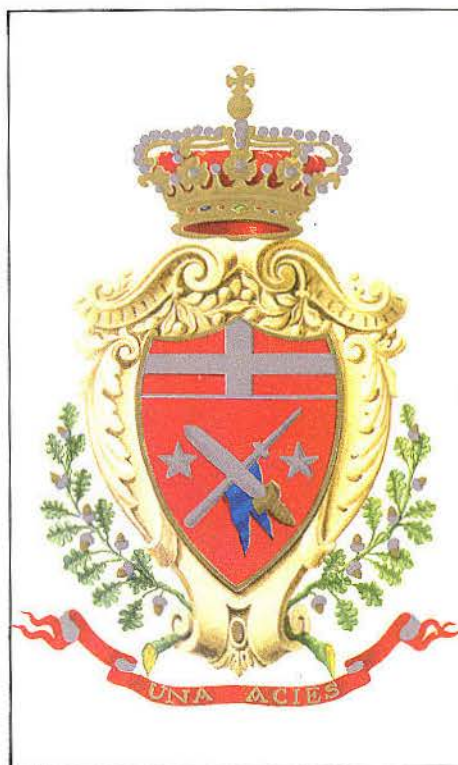
Having ascertained the validity of the training it offered,

Napoleon Bonaparte had no hesitation in maintaining the school, changing its name to "**Military School for Artillery and Engineers**".

After the Restoration, Francesco IV refounded the "**Accademia Nobile Militare Estense**" in 1821. Like the previous ones, it was not at first housed in the Duke's Palace but in a noble palace and then a barracks adjoining St. Peter's church which is now the "Fanti" barracks and recruiting office.

In 1852 Francesco V changed it into the "**Accademia Militare Estense**", granting admission to untitled young men; a few years later, together with all the ducal institutions, the school was suppressed.

However, Modena was not long without a military school as, in September of the same year, General Fanti, Commander of the Military League of Central Italy, founded the city's "**Scuola di Fanteria**" to recruit officers for the league under the command of Colonel Ruffini. Following on the inclusion of the central Italian provinces in the Kingdom of Sardinia, the school became the "**Scuola Militare di Fanteria**"



(May 9th 1860), and had the initial task of supporting the activities of Turin's **Regia Accademia Militare** with supplementary courses similar to those held in Ivrea.

As we have seen, however, it took only a few years for the activities previously performed at Ivrea and Pinerolo to be concentrated in Modena. This was due to the need to have one single training source to standardize the courses and overcome differences in mentality and technical jargon. Thus by the end of the Risorgimento upheavals a pattern emerged that was to remain until the end of the second world war: Infantry and Cavalry officers were recruited in Modena, Artillery and Engineers in Turin.

The two academies, in other words the "**Regia Accademia Militare**" and the "**Scuola Militare di Fanteria e Cavalleria**", went their own separate ways for nearly 80 years. Regulations underwent many changes as the years went by, with the constant aim of adjusting the Institutes to changing times and conditions. Thus, with the introduction of the minimum age of 17, written and oral entrance exams, and as studies were brought into line with the equivalent studies in university faculties while at the same time acquiring more specifically military features with the creation of Application Schools, the military schools gradually evolved, in their separate quarters, towards their present form.

The need for a greater number of officers as Italy became involved in conflicts in Africa and Europe in the twentieth century was brilliantly met by the two schools. Normal courses were suspended and crash courses recruited hosts of young officers into the mobilized regiments. At the end of the first world war special courses were organized to complete the training of officers who had received the rudiments of technical and professional training.



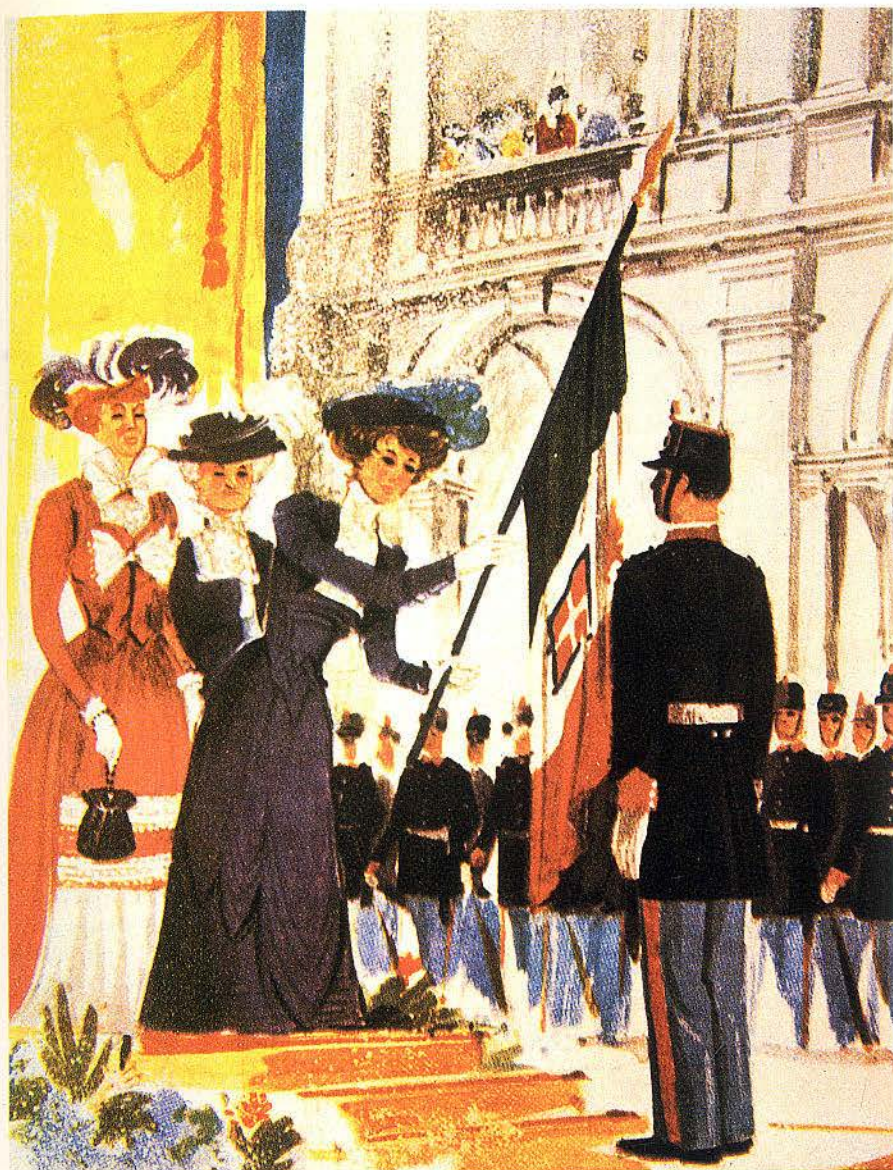
It was only in 1923 that the two institutes began regular activities once again. In that year the Modena school was promoted to "**Accademia Militare di Fanteria e Cavalleria**"; consequently, the Turin academy had to specify in its title, "**Accademia Militare di Artiglieria e Genio**", the Services for which it trained its officers.

Both institutes had their own Flags: Turin exchanged the flag it had received from Carlo Alberto in 1849 for the new Flag adopted by the Italian Army in 1860. The substitution took place on April 1st 1894, and the old flag of the Risorgimento

Decree granting the heraldic crest to the "Accademia di Fanteria e Cavalleria" (1928).

period, which was originally kept in the Turin Artillery Museum, is now in the Historical Museum of the Academy of Modena, together with that of the Scuola Militare di Fanteria e Cavalleria, offered by the "Dame modenesi" on March 14th 1891 and given to the Commander during the swearing – in ceremony.

There is an important innovation in the Modena Academy that dates back to 1936: it was, in fact, decided in that year that the recruitment

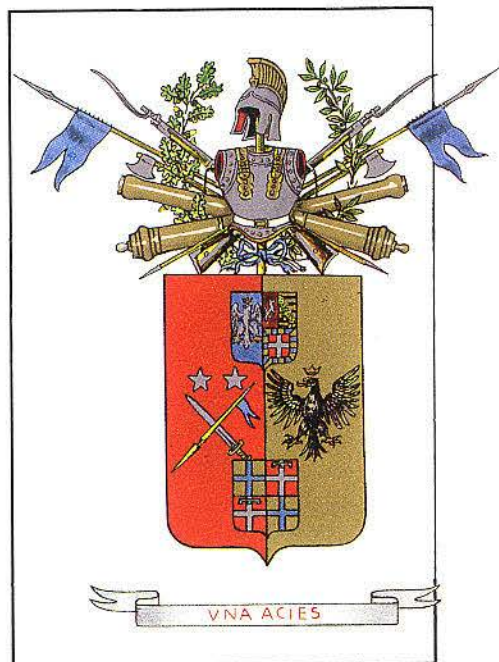


and training of officers for the Royal Carabinieri were to take place here. Thus a company of cadet Carabinieri was formed and began activity in the school the following year. Today, 50 years later, we can see how valid this initiative involving the first of our armed forces was to prove.

Demand for junior officers rose steeply during World War II; consequently the length of the Academy's courses was reduced and training became less theoretical and more practical. During this period up to three courses were often running at the same time.

The events subsequent to September 8th 1943 led to both Academies being dissolved.

The Flag of the 26th Infantry Regiment "Bergamo", temporarily substituting those of the two Academies, waved in greeting to the refounded **"Comando Speciale Regie Accademie"** on May 24th 1944. For two months this Command had combined the two companies of second-year cadets of the Modena and Turin academies, who had moved to the free territory after the institutes had been dissolved, in the "Tenente Pico" barracks in Lecce. On December 1st 1945 the Command acquired the name of **"Regia Accademia Militare"** and began the first "extraordinary combat course", thus becoming the first source for the recruitment of professional army officers in active



Above.
Crest of the Military Academy.

Left.
Consignment of the Flag to the "Scuola Militare di Fanteria e Cavalleria" (1891).

service since the unification of Italy.

Following on the institutional changes that came about with the new Republic, on June 19th 1946 the Academy was given its present name of "Accademia Militare" and in the following year, on February 2nd 1947, had back its old flag from the officers who had cut it up on September 8th 1943, each carrying a piece to safety.

The end of 1947 was marked by other decisive developments in the history of the institute. In that year, on October 15th, the Academy returned to the Palazzo Ducale in Modena where work was still going on to repair war damage. On November 4th a new Flag was given to the cadets, and it was this flag that hailed President Enrico De Nicola when he inaugurated the new quarters and courses of the reunited Academy with a simple, austere ceremony.

On 30th May 1950 a Presidential Decree granted it a new crest representing the

traditions of the Modena and Turin schools, neatly combined and united under the motto "Una acies".

THE ACADEMY TODAY

During the last few months about 300 cadets of the 166th course, "Dignità", have left the school with the rank of 2nd lieutenant to continue training at the various Application Schools. How did they get here, and what was their life like during these two years spent in Modena? Above all, what are the aims of this institute which, as we have seen, dates back 300 years?

The Military Academy recruits and trains the regular officers in the Army Branches (Carabinieri, Infantry, Artillery, Cavalry, Engineers, Signal Corps) and some logistic Corps (Motor, Finance, Commissariat). Recruitment takes place among men of 17 to 22 with secondary school certificates.

Entrance to the Military Academy is granted to those passing the admission tests:

- medical examination and psychological aptitude tests held in Modena with the assistance of Bologna Military Hospital;
- written general education test, consisting of a composition on a subject chosen from three titles; the test is held at the Commands of the Military Regions;
- a 40-day trial period, during which candidates can see what life in the Academy is like and decide whether it is for them. During this period their aptitude for the kind of life they will have to face is ascertained, and they are prepared for the last test;
- an oral mathematics test covering algebra, geometry and trigonometry.

Those passing all the tests and coming within the placings corresponding to the number of vacancies have the right to attend the Academy and enroll in the various courses for which

they can make personal application. The number of places available is established each year by the Defence Ministry according to the staff requirements of the Army. With slight variations depending on the circumstances, it has settled around 300 cadets per course: 50 in the Carabinieri, 200 in the Service Arms and 50 in the Logistic Corps.

One of the latest entrance tests saw about 4,300 candidates competing for 265 places – a ratio of about 16 to 1. For an average 100 candidates, selection can be summed up as follows:

- 40 fail the medical and psychological aptitude tests;
- 30 fail the general education test;
- 23 withdraw or are found unsuitable during the trial period, or fail the mathematics test;
- of the seven accepted, an average of two do not complete the course (failure in tests, resignation, health reasons) and at the end of the two years only 5 reach the rank of 2nd lieutenant.

The targets assigned to the Military Academy by the Army General Staff for the training of professional officers are achieved by means of a comprehensive programme covering four basic areas corresponding to the educational and technical qualities expected of future army officers: character building, technical-professional training, improvement of general educational standards, sports and physical training.

Character building is fundamental to a wide-ranging course training young men for positions of command; it represents a real need, and serves to help create a spirit of initiative, a sense of responsibility and solidarity, self-respect and consideration for others, and the capacity to set an example at all times.

Training activities also include the technical-professional education of cadets. Apart from the more strictly military subjects (military science, weapon train-

ing, ballistics, map-reading, regulations), this also includes such practical activities as drill practice, range practice with individual or platoon weapons, combat training, artillery, engineering and signals, training to drive motor-cycles and other vehicles including tanks, mountain-climbing, parachute-jumping and training in patrol duties.

Most of this training is carried out during a three-month tactical campaign after the exams at the end of the first year at the Military Schools for Mountain Warfare, Parachute Jumping, Infantry, Artillery and Armour. This period of intensive training ends with a study-trip, usually to units and places along the eastern border. At the end of the second year, in addition to the summer camp which lasts a month and is held at a military firing-range, there is also a study-trip abroad; in recent years cadets have been to Munich and Paris.

Further education takes place within the context of the previously described activities, and is based on university-level programmes covering two areas:

- juridical-administrative, following some of the basic degree courses in law, politics and social sciences, economics and commerce;
- scientific, including the two-year preliminary period in engineering and mathematics and computer systems.

Study syllabuses and organization are similar to those in university faculties in both content and duration.

Lessons are given by university professors. University level courses end with the final exams, usually held in June.

The Academy attaches fundamental importance to training in sports and gymnastics, which are considered essential for the psychological and physical well-being of cadets and the character development of the future officer. For this reason the school offers many sporting activities based on gymnastics; the various athletic

activities also include field events. The physical education programme includes gymnastics, self-defence, fencing, tennis, basket-ball, volley-ball and marksmanship.

THE ACADEMY TOMORROW

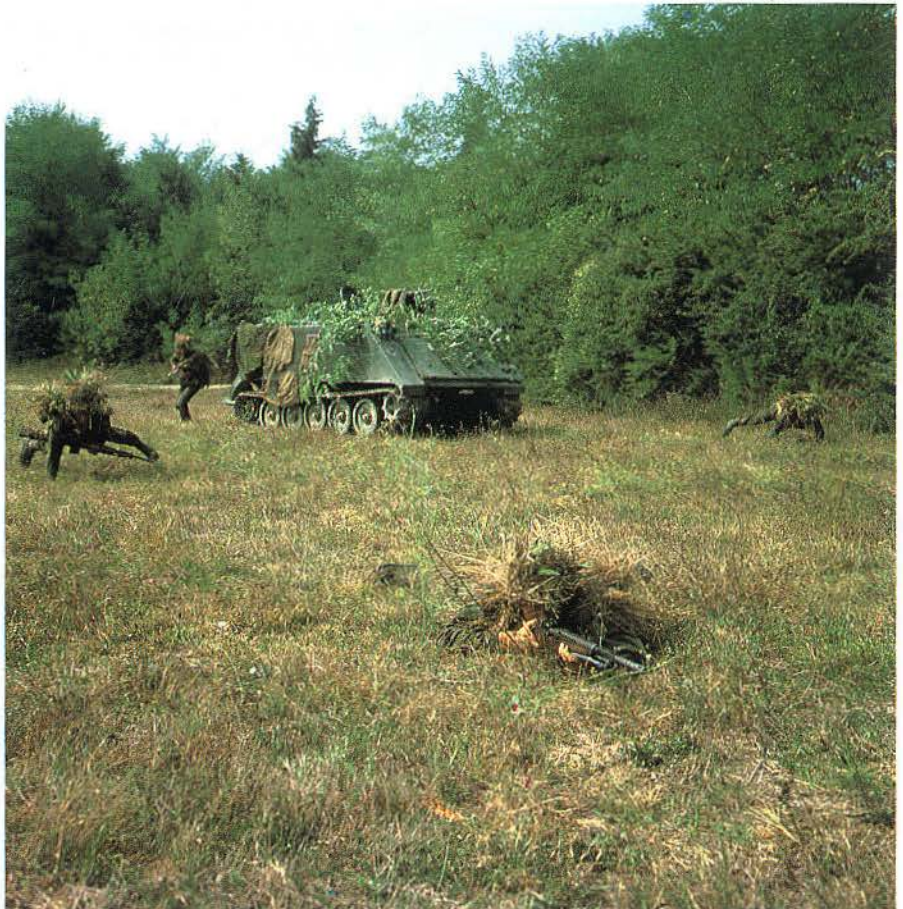
An institution that wants to move with the times cannot rest on its laurels; it is in fact obliged to look to the future to exploit all the chances progress offers to improve organization and training.

The scope for our activities is constantly increasing, with excellent opportunities for further development, up-dating and automation; this in turn implies more economical use of men and means, and eventually a better product – i.e. the young officer himself.

In terms of management, the introduction of ADP has been a real step forward; without a battery of computers, we would not be able to handle all the data, applications and communications involved in testing 4,000 candidates. The systems have proved equally useful to keep track of the scholastic progress of individual cadets, phasing of programmes and control of the health and financial situation – in short, for every aspect of the life of cadets in the school.

Much has already been done in this field, and there appears to be practically no limit to future developments. It would, for example, be possible to streamline the mechanism for entrance tests, which has remained basically the same since the end of the war and is now somewhat old-fashioned and laborious.

The medical examination and trial period must obviously be retained; they represent a



Above right.

Parachute jumping at Pisa's "Scuola Militare di Paracadutismo".

Below right.

Cadets during combat training.

direct confrontation between individual aspirations and the institute's very high standards. The other tests, however (written and oral exams, psychological aptitude tests), which now take up months of the candidates' and Academy's time and resources, could very well be replaced with a test more closely geared to the school's requirements, with the emphasis on both educational standards and creative and expressive capacities, and qualities of character and aptitude; the present methods for ascertaining all this are very laborious. The University of Commerce "Luigi Bocconi", has adopted a rational selection system for its candidates along these lines, and the Academy might well try something of the sort.

Improved communications between the military and civilian spheres could thus offer interesting examples to those capable of benefiting from direct contact.

The demand for higher professional standards among young officers prompts further reflection on the training techniques the Academy might consider adopting in the future.

Anyone thumbing through the Academy syllabus will realize what an important role general further education has played in enhancing technical-professional training.

We can, for example, now boast that, at the end of four years in the Academy and Application Schools, students of the computer science course need only take two exams at the state university and write a thesis to qualify as graduates in mathematics and computer science.

It may not occur to many to consider the cost of providing officers with qualifications which are more useful in civilian life than in the army career, or wonder just how many officers graduate and how many tend to neglect the institute's study courses once they are caught up in their life in the unit.

Does the Army really need officers with degrees in subjects equipping them for civilian life? While Italy seems to be producing a surplus of such graduates, the introduction of civilian subjects into the Academy's programmes implies dropping some of the more specifically military subjects, since the scholastic year cannot be expanded an infinitum.

Those who have an idea of what the finished product, the officer emerging from all this training, should be like, can certainly appreciate this need, as many have demonstrated in the last few years. However, many may wonder whether too much emphasis has been placed on the officer-manager rather than the officer-commander, providing basic training for managers when it might have been more useful to concentrate first on producing good commanders and leaving the sort of professional training that equips people for civilian life to a later date.

The time is now ripe to redefine out finished product as one with distinct professional qualities, already equipped with new ideas and vitality when he joins the unit and not waiting to be moulded by his experience in the units as if the institute's training had counted for nothing.

Our programmes and activities must be geared to this new figure without discarding the subjects, courses and training that may still prove valid, but without getting carried away by the idea that degrees must be obtained at all costs.

We must find time and space in our study plans to enhance military instruction; the sort of instruction received by a generation of officers trained in the 50's and 60's who have never regretted the lack of a degree and feel no less fulfilled and useful than today's trainees are likely to.

Our subject in these concluding remarks is the Military Academy of tomorrow. But often, instead of dreaming of the revolutionary impact of

computer science, cybernetics, bio-engineering and... star wars, one tends to think of the various little innovations and acceptable changes affecting today's Academy; we know that the Army's future lies in the Academy today, and that this continuity is absolutely guaranteed.

Fully respecting the time-honoured traditions it rests on, but ready to receive whatever valid novelties the winds of change and progress bring without constraint, the Academy confidently looks to the future of its cadets. The Academy will respond to the requirements of the Army in the future, and in the near future the Army will be what the Academy has, through sound organization and efficiency, succeeded in making of it.

Giovanni Brugnola



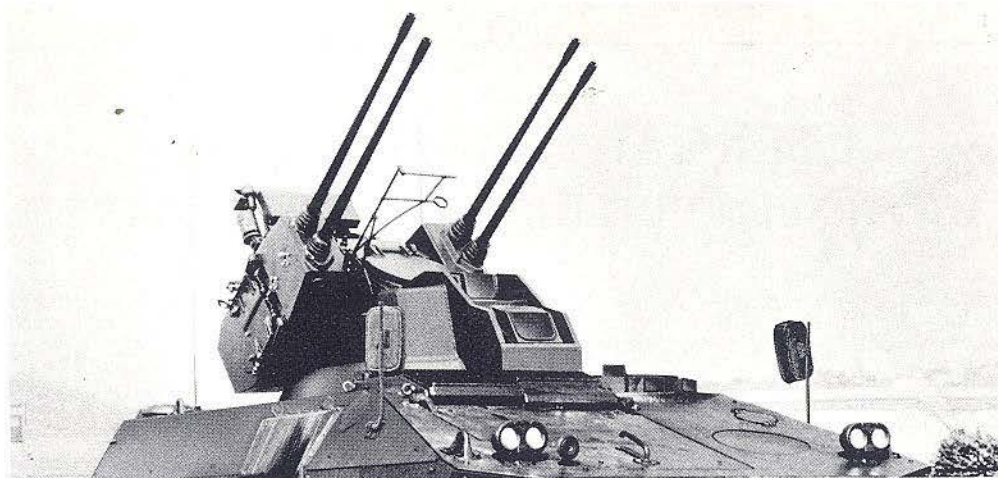
Brigadier General Giovanni Brugnola attended the 10th Course at the Military Academy, the 88th Course of the General Staff and the Inter-Service Staff Institute.

He has served as General Staff Officer, with the "Centaurio" tank Division, the Military Academy and with III Army Corps Headquarters.

He has been Deputy Commander of the "Gorizia" Brigade and Commander of the "Goito" Brigade.

He has been Commander of the Military Academy since November 1984.

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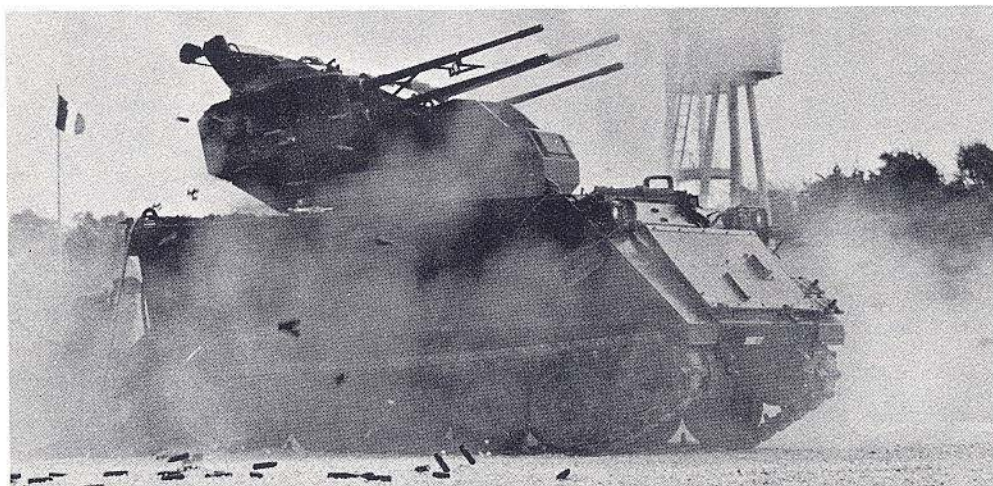


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ETERNAL TRIANGLE '86

THE TRAINING OF THE ALLIED TANK CREWS

The annual exercise at division level carried out in Germany by the British Army of the Rhine (BAOR) involves, in turn, one of the four Major Units attached to the combat unit of BAOR, the First Army Corps: i.e. the three armoured Divisions (1st, 3rd and 4th) stationed in the Federal Republic of Germany and the 2nd Infantry Division stationed in the United Kingdom. The British Major Unit, within NATO, is subordinate to the Northern Army Group (NORTHAG) and is charged with the defence of the northern area of the "Fulda Gap" i.e. the area between Kassel and Hannover. The Southern flank is covered by the 1 Belgian Corps, while the First German Corps is deployed on the North, followed by the Dutch Corps. Further to the north is one Brigade of the 2nd US advanced Division as well as German and Danish troops which do not belong to NORTHAG. Normally, Allied units of various size, coming from some of the mentioned Major Units, join the British troops for the exercise.

"Eternal Triangle" is the name usually given to the exercise of the 1st Armoured Division. The last was carried out in 1983; most of the Division's units in 1984 had performed organization and umpire functions in "Lionheart", the most important exercise carried out by the British forces after the war.

The manoeuvres of 1986 have taken place in Lower Saxony, between Kassel (to the southeast) and Paderborn (to the northwest) with the participation of the following forces: the British 22nd Armoured Brigade, 19th Infantry Brigade and 6th Airborne Brigade, the first reinforced by a company of the 43rd Dutch Tank Battalion, the second by the 1st Battalion of the Danish Life Regiment; the Blue deployment was completed by the German 3rd Panzer Brigade. The Orange side could rely on: two regiments of "Challenger" tanks, the Royal Hussars and the 2nd Royal Tank Regiment, an infantry Battalion, one reconnaissance Company, plus supports of artillery, engineers and services. All these troops have moved with due caution on civilian territory with their tracked and wheeled vehicles, transport and combat helicopters, so as to prevent the final repayment of damages from becoming too high, besides trying not to inconvenience the inhabitants of the area too much. The exercise proper lasted one week and was preceded by a week of training at Brigade level, also on civilian terrain.

The training was hindered in part by rain, which made more difficult for the heavy vehicles to move on farmland. The relaxed climate at the end of the week has permitted to gather information about the training of the staff of the tank units employed and to compare the various levels of training, obviously taking into account the various types of enlistment, different from nation to nation.

The British Army of the Rhine, based on volunteers, is considered one of the best trained, owing also to the recent participation of many of its men to real operations during the Falkland-Malvinas campaign and, in addition to this, to the periods of service in Northern Ireland. Even though these missions do not represent the same type of action required of the soldiers successively employed in central Europe, they are nevertheless the baptism of fire for many of them.

This is the average training curriculum of a British tank crew member, in the words of an officer of the Royal Hussars, a unit which received the new "Challenger" tanks between 1983 and 1984 and is now receiving the thermal observation and gunnery system (TOGS). First of all it must be made clear that the personnel, even if it is made up of volunteers, undergoes a constant rotation, due to various reasons, such as specialization courses, shifts, etc. When the recruit arrives at the unit, he has already attended a basic course in which he has been trained as driver or gunner and, in consequence, the regiment's first task is that of training him in the other speciality, so as to be able to employ him in both jobs; this course, which lasts six weeks, is usually completed within the first six months from the recruit's arrival at the unit. After a year of service in this position, the soldier attends a course that lasts from 10 to 12 weeks at the Bovington Training Centre, at the end of which he becomes a specialist and assistant instructor as driver, gunner or radio operator. With the next step, after another approximate four years of service, he qualifies as instructor, after a course of 10-12 weeks at Bovington. Altogether, the training lasts about five years and on its completion the soldier can be employed as instructor at the Bovington Centre or at the regiment itself.

The regiment's training cycle starts usually after Christmas, when the crews are set up and the new recruits are

introduced for training; this phase lasts until the beginning of spring and is followed by the training at platoon level in the training area of Soltau and by a live fire training camp at regiment level, that lasts from 10 to 15 days, generally at the Bergen-Hohne shooting range, near Fallingb., where the regiment is stationed. In June-July the men return to Soltau for company-level training and, at the end, regiment training, thus developing a progressive process. Finally in autumn there is the Brigade and Division training which takes place on civilian land; this type of training has been defined by the British officers as "extremely important", in that it permits to train on unknown ground, and learn to exploit the real environment; the training areas in fact are only suitable for lower-level drills, which do not permit to acquire experience in complex manoeuvres such as those carried out on civilian land. The BAOR is making giant steps forward in the simulation field: the objective is to have a laser simulator on every tank, in order to make the exercises at every level increasingly nearer to the truth, and especially to improve tactics; furthermore, it is hoped that in due time also the Allied tank units will receive compatible systems. This simulation is nevertheless considered only complementary to the fire activity; in this regard a British crewman during the basic course fires about 40 rounds, a mixture of AP and HE shells, mostly blank. The yearly regimental training envisages approximately 70 rounds, which can rise to 90-110 if the unit is sent to the Suffield (Canada) training area. The exercises in this huge area of North America, which permits fire missions against moving targets at a distance of some tens of kilometers, take place, for every regiment, every two or three years, according to the availability and necessities of the units; every cycle in Canada is preceded by a period at the Brigade & Battle Group Trainer of Sennelager, a simulation system created for perfecting procedures more than tactics, also employed for permitting the various units to acquire the necessary automatism in the application of procedures when they return to their usual tasks after a period in Northern Ireland.

The Danish crewmen are at an intermediate level between voluntary service and draft; their recruitment system is being changed just in this period. In fact, up to now the tank



The British Tank "Challenger".

crews were made up exclusively of professionals. In the future, in Zealand at least, the crewmen will be recruited for a three-years term and follow a new training sequence. This will permit to have a higher number of really operational tanks, with capable crews, since the Danish Army has declared that it cannot operate at an acceptable level with tank units whose drafted personnel serves only a 12 months term (the length of military service in Denmark). Therefore, for the future crews the first 12 months will be considered as regular draft service, while for the further 24 months they will be paid the wage of a professional soldier of equal rank, currently in service. It must also be pointed out that the professional NCOs, up to the rank of WO3, starting from the 33rd month of service accumulate one week per month, which they can use for personal education outside the organization. During the period in which they are away from the unit their position is considered as filled; consequently a commander very rarely can avail himself of all his men. The new course has not been precisely defined yet. Until now the tanker recruit has received a basic instruction of five months before being sent to the unit where the merely technical instruction received as driver, gunner or radio operator is supplemented with the tactical part of the teaching. The training has been carried out

prevalingly at the operational unit. A Danish gunner fires 25 rounds during the basic course, while during the remainder of his service the average varies from 25 to 35 rounds per year in tactical situations varying from fixed position to simulation of a platoon fire action. This type of training is normally carried out at the Oksbel firing range, on the western coast of Jutland. No Danish unit carries out live-fire exercises in German shooting ranges.

The Dutch army follows a model of recruitment much similar to the Italian one, with 80% of the tank units' personnel made up of draftees. The compulsory Service lasts 14 months for the soldiers and 16 months for reserve officers and NCOs. A tank platoon is constituted by one professional soldier (the commander), one reserve officer, two reserve NCOs and twelve privates. The draftee tanker's curriculum envisages a four-month basic course at Amersfoort Training Centre; there the recruit specializes in his role as a driver or gunner, takes part in a live-fire camp in the Vlieland region, an island in the north of the country, during which each crew fires from 15 to 20 rounds. Moreover at the Centre there are devices for the simulation of loading and other various operations which a crew member must perform in combat. In the remaining ten months the men complete their training. Fourteen months are considered by the Dutch army the minimum indispensable for training a crew member. The tactical training is carried out mostly in training areas. The personnel of the 43rd tank

battalion, with whom we have spoken, are the luckiest, since the unit is stationed very close to the best-equipped tank shooting range in continental Europe: the already mentioned range of Bergen-Hohne. As a rule, the unit is called to participate in the exercises on civilian land planned by the various Allied armies, while every five years there is an exercise of the I Dutch Corps (the last was in 1983). Also the Dutch officers have confirmed the necessity and validity of this training, which enables the men to verify their preparation in very realistic conditions. During the ten months spent with the unit, each crew, besides refining its tactical capabilities, takes part in numerous firing exercises, during which it fires 70 rounds, which brings the total to 90 rounds in the course of the entire service. Moreover the crews train at the battalion with a fire simulator linked to a computer and they can also employ television cameras installed on the tanks for controlling the accuracy of the fire simulated during the blank shooting. Field tactical simulators are not available yet: the various system on the market are being evaluated and the units are looking forward to acquiring them.

Availability of training areas and shooting ranges at home and near their stations, possibility to carry out wide-range manoeuvres on open ground in the FRG, availability of advanced simulation systems: these are the ingredients that enable the British, Danish and Dutch tank units to attain their training standard.

Paolo Valpolini



“SICUREZZA E DIFESA,,

(«*Security and Defense*» - *Internal and International Factors*)

Franco Angeli Ed., 1986, 325 pages, 30,000 lire

PRESENTATION BY CARLO JEAN

This book takes on the issue of the relationship between security and defense, a relationship which in Italy – unlike the rest of the West, including the neutral countries – has yet to find an established spot on the national agenda of cultural and political concerns.

Over the last decade, it is true, an arduous effort has succeeded in creating a certain amount of space for a political approach to issues of security, defence and military institutions; what is more, this has been accomplished within a specifically Italian context as opposed to the more generic Western or Atlantic framework. The authors of the book under review have themselves contributed to the creation of this space, both with the present volume and with “Il Pensiero Strategico” (“Strategic Thinking”), the work which preceded it in the Angeli-ISIG series.

The renewed interest in security, defense and the armed forces has not, however, had a significant impact on the traditional outlooks and languages of politics, factors which often fall prey to the arbitrary effect of approaches and designs developed in other fields and then fragmented into a number of isolated sectors, supposedly, in some cases, for the sake of the technical autonomy of each area. The truth is that a national investigation into the issues of security and defence can only be developed on the basis of an all-encompassing set of ties between internal and international political factors, between problems of national security and reforms involving both institutional bodies and the civil service, between planning efforts aimed at scientific research and technology and policies governing industrial activity, international cooperation and development, foreign trade, etc.. Indeed, only through this set of ties can the country's national interests be de-

termined, leading to the development of a national agenda able to define Italy's international role as well as her policies of security and defense.

If Italian security policy can be said to have shown any one dominant factor in the period following the Second World War, it is the constant attention paid to the conservation of domestic political equilibriums at the expense of a potential global role for the country, a role in which Italy would become a real participant in the world of international politics. At question is a vision of Italy as a sovereign state with, nonetheless, deeply-rooted ties to an alliance in which structural questions have assumed a greater importance than on past occasions, not only from a military point of view, but also in an economic, social and cultural context. It is no coincidence that the principal threat to national security has been perceived as the risk of internal unrest, while the country's position as a member of NATO and, more specifically, as an ally of the United States, has been considered a fundamental choice, almost as if it represented part of a de facto constitutional order, on a par with the Concordate between the state and the Catholic Church. Once made, this choice has been seen as providing a definitive solution to the country's problems in the area of national security and defense, a development made possible by the fact that these problems have been brought under the umbrella of the Alliance's collective security and defense systems.

But national sovereignty is a condition which can neither be refused nor negotiated, at least not until such time as a set of truly representative, extra-national bodies are established (assuming, but certainly not conceding, that such a development is possible) whose various members are tied by

relationships of fundamental equality. In the event, the problem inevitably rises to the surface, especially in crisis situations, demanding that the country's leaders respond by defining the appropriate roles and policies. This response is particularly important in a national context, where its absence could result in an erosion of consensus as well as a fall in the effective legitimacy of political institutions and structures, not to mention the defense and security systems themselves, both on the national and the collective levels.

On more than one occasion it has been brought to the attention of our country – and, at times, by our own allies – that our choice of the Atlantic Alliance has not resulted in a complete, definitive solution of Italy's every last security problem, something presumably to be accomplished by shunting our national responsibility onto the collective responsibility of the Alliance (if not, indeed, onto the global responsibility of the United States). This point has been made not only at junctures where Italy has been called upon to reaffirm her solidarity with the Atlantic Alliance, and the West as a whole, but also in connection with the bloody offensive mounted by the forces of terrorism, both internal and international, as well as the crises and tensions generated in the Middle East. It was most significant that in 1985, for the first time in seventy years, security-related foreign policy decisions threatened to bring down the government (though the crisis was eventually resolved).

The psychological discomfort attendant upon Italy's recognition of her new responsibilities towards herself, as well as towards the causes of Western security and peace in the Mediterranean (a discomfort, for that matter, analogous to the sentiments experienced in the other states defeated during the Second World War, that



is to say, Germany and Japan) clearly demonstrates that the country lacks the cultural and political preparation needed to meet the changing situation. One notes the need for a new political approach to the issue of security, an approach which would include a political framework for both the defense system and the various military institutions. Furthermore, this framework should be tied back to the other aspects of internal and international politics – in particular the reform of the state and the country's industrial renewal – in order to resolve a crisis which threatens to become a structural problem, an eventuality that would make any national project pointless. The politics of security is a global affair, determined by factors which differ from strictly military considerations. These last amount to nothing more than an instrumental component, representing, for all intents and purposes, secondary issues.

The book's various chapters, each an essay on a specific subject clearly set off from the rest of the volume (which owes its inter-disciplinary nature to the sum of its parts), deal with important themes, all of which fit under the broader topic of a political framework for security. At issue are considerations of geo-politics and geo-strategy (Bonante and Santoro, Caligaris), technological and military-technical factors (Jean, Levi, Bisogno), internal political factors (Fischella, Bozzo, Pelanda-Lizzi, Ilari, Rossi-Politi) and the contribution of diplomacy to security policy (Gaja). These pieces also set out to define, or at least to outline, a unified political-strategic language which could serve as an instrument of mediation between the various problems at hand and the potential for facing up to them and producing solutions consistent with the nation's goals and interests. By making such an effort, one can move beyond a language and an outlook which follows overly simplistic "Atlantic-Western" guidelines – or which amount to nothing more than tools to be used within the internal debate of a single political current – and achieve a synthesis and a level of homogeneity able to satisfy all the nation's political forces, an indispensable step in terms of security, defense and the armed forces. Within the framework of the international political system, there is also a need for a functional approach to statehood which is able to reconcile the undeniable needs of national development with the attendant outside pressures at the same time as it links, or translates, domestic policy into international policy, and vice versa.

Furthermore, there is no need to worry that the necessarily gradual, and undoubtedly difficult and controversial, development of a political approach

to security based on the reality of Italy's situation rather than on a make-believe, overly simplistic and conventional representation of international society and the Western world, will lead to a recrudescence of a real or imagined "difference" between Italy and the West, an eventuality which would render the abovementioned course of action, if not dangerous, then at least foolish and unproductive.

A sense of belonging to the Western world, together with an internalization of its values, have become firmly rooted in the political outlook of the whole of Italian society. It contrasts to the situation in the early 1950's, these principles are no longer exclusively dependent on the bonding role of Atlantic solidarity. The ideological concepts of "Atlanticism" and "anti-Atlanticism" belong to a period when the existence of a "different" path for Italy was still held to be both feasible and meaningful, as it was in both Germany and Japan. In the event, this movement was defeated in no uncertain terms, as were the political regimes which had sought to express it in the three countries.

Certain currents within the ranks of the Catholic Church, as well as the national-popular component of the Communist Party, have tried to reconcile the existence of an Italian "difference" with membership in the post-war framework of the Atlantic Alliance. Paradoxically, both groups have found the rational for their identity and their survival within that very framework; that is to say, within a society which has become Westernized in terms of its actions, its modes of behavior, its economic and psychological structures and even its political choices, thanks, above all else, to the process of adjustment sponsored by these same two groups, albeit not without a fair amount of contradiction, difficulty and second thoughts.

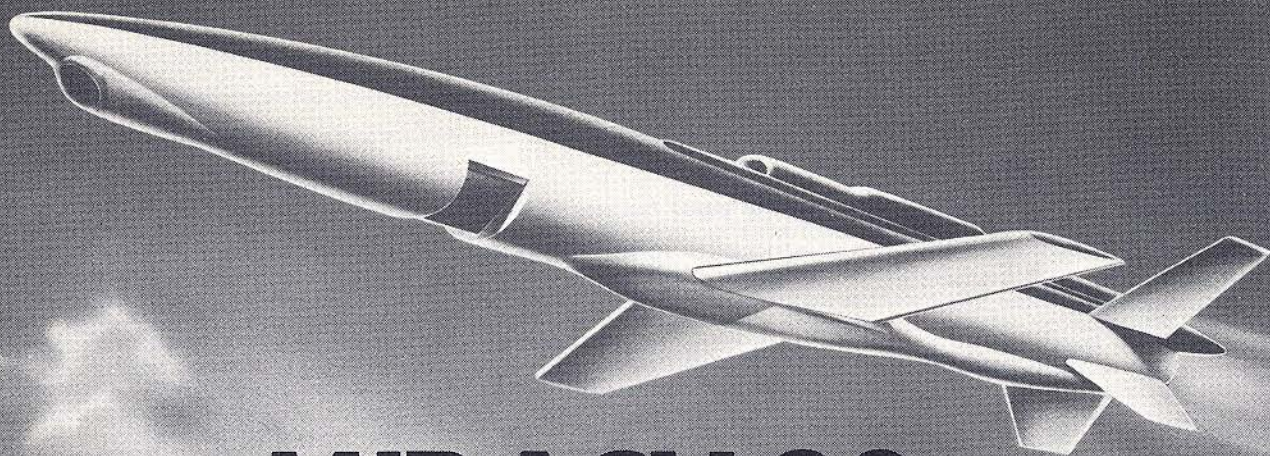
All of which goes to show, despite what might appear to be the danger of a newly emerging nationalist-neutralist temptation, that both Italian society and the Italian political system have entered a period of maturity and adulthood, a period which finds them less dependent on outside reference points or directions and more aware of their own needs, their own potential and their own pre-conceived notions.

The lingering presence of "ideological" factors within the domestic discussion over foreign policy and security issues can seemingly be traced, first and foremost, to the weight of tradition, as well as to a less than complete awareness of the transformations which have taken place and, most importantly, the lack

of a language suitable to the task of expressing the new state of things. The situation may actually have matured to a degree where ideologies with mutually exclusive points of reference can be left behind. The truth is that these belong to the past, representing, for all intents and purposes, nothing more than a vehicle for the abdication of our future and our responsibilities.

The fundamental problem of the day, which once involved keeping Italy inside the Western Camp, now consists of identifying the country's role within that alliance. If it is to be productive, benefitting not only Italy, but the West in its entirety, then this role must be accompanied by a realistic evaluation of the nation's interests and potential. In other words, the definition of the role is absolutely unthinkable in the absence of a national project.

Italy can not limit itself to supplying the political-military alliance of the United States and the other Western European countries with territory and military forces. Its contribution to the joint effort must include cultural, technological and industrial strengths as well as political and planning skills, all of which will allow it to carve out a space of its own. The roles which cast the country as the "bridge" between Europe and the other countries of the Mediterranean, or as the "stairway to the Alps", now appear to be thoroughly inadequate characterizations which have either been outmoded or are well on their way to an obsolescence brought about by the evolving economic, political and strategic realities. As formulated, these models show a greater concern for internal problems of a secondary order than for factors of international politics. Only by adopting an active role, and not a passive or a subordinate position, can Italy make a concrete, original contribution in the areas of Atlantic loyalty and participation in Alliance affairs, two directions which, by now, are firmly rooted in the political consciousness of the nation. If the on-going strategic debate in Italy is to be grounded in reality, then this role must be accepted. Discourses concerning other people's situations, as concerning realities over which we have absolutely no control, represent, as always, a readily available, yet fruitless vehicle for escaping our own concrete problems, something we do by engaging in abstract debates involving grand, all-encompassing systems. We alone can solve the very real problems connected with security, national project, doing so by facing up to the commitment, the responsibility and the effort which a like task is sure to entail.



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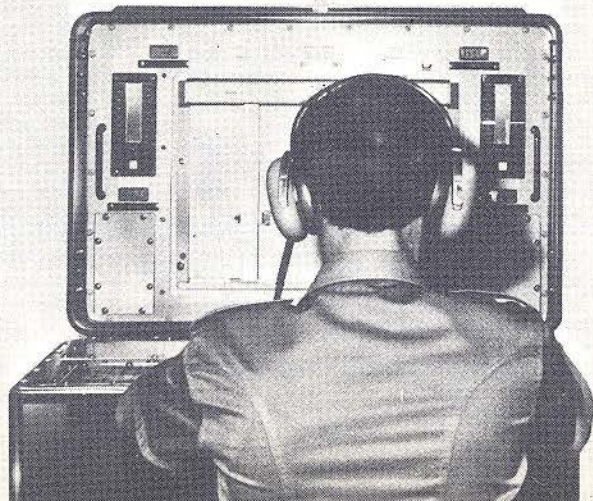


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strategia, direzione politica, comando operativo

L. Caligaris, C. M. Santoro:
"Obiettivo Difesa - Strategia, direzione, politica, comando operativo" ("Objective Defense - Strategy, Political Direction, Operational Command"), Arel, Il Mulino, 391 pages, 25,000 lire.

As Alexis de Tocqueville once noted, the cure to an army's ills must

be found not within the army itself, but within society. This calls for a knowledge and an understanding of the realities, problems and points of view associated with the military. In other words, it presupposes the possession of a strong familiarity with things military on the part of a nation's leadership, a situation whose hoped-for advent has been postulated in positive terms - and on more than one occasion - in the pages of this very publication. In the event, this appeal has gone partially unheeded, though a certain amount of progress has been made in the past few years. A particular shortcoming has been the lack of an outside cultural contribution.

Given this situation, the initiative of the Arel (The Agency for Research and Legislation, founded by Christian Democratic members of Parliament) deserves nothing but praise. By sponsoring a series of studies on issues of security and defense, the program is also meant to provide a stimulus for like initiatives. In addition, it could conceivably give rise to a broader, more in-depth treatment of military culture within the military itself, a development which has often

been hindered by excessive caution, conformity and self-censorship. I myself, being a firm supporter of free enterprise, as well as a convinced believer in the value of a competitive environment within the field of commerce, hold the same principles to be equally important in the area of culture. I also believe that institutions which have very little to say, and prove unable to give their imaginations either significant latitude or long-term range, are inevitably destined to lose prestige, credibility, legitimacy and efficiency.

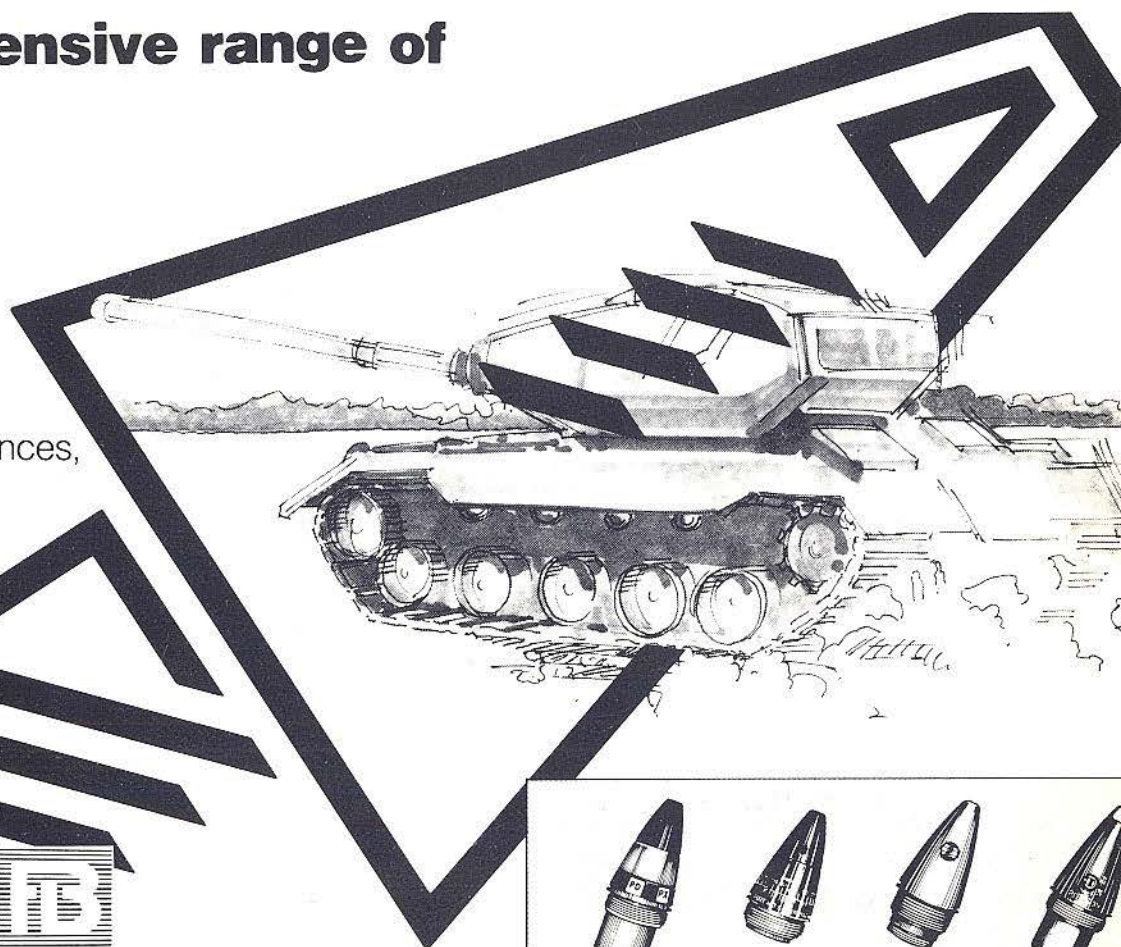
The volume under review is divided into three parts.

The first, by Santoro, deals with Italy's foreign affairs and defense policy as well as the role these play in military policy. Three points prove particularly interesting. The first involves the consequences of Italy's status as a "mid-size regional power" and the need to define a national strategic role consistent with the possibilities and the constraints generated by this status. At issue are not autarchical or nationalistic longings, but rather the need to define exactly what it is we want (and, subsequently, to organize ourselves to obtain it), a

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step which, for that matter, our own allies have been asking us to take in increasingly insistent terms. The second point stems from the conflict between the "continentalist" and "navalist" currents. Tied to the aforementioned definition of a realistic role, this conflict is now giving rise to an in-depth debate reminiscent of the disagreement which enlivened the rich military literature of the late eighteen-hundreds with its discussions of whether to opt for land or sea operations in an eventual conflict with France. Choosing a realistic course, the author, whose views place him closer to the "Bissolattian" camp than to the "Crispian" school, seems to give top priority to a scenario in which an Italian rapid-intervention force would be deployed in the Danube basin rather than in the Mediterranean, in part because of a lack of strategic transport facilities, as well as support from air and navy firepower, but, above all, because of the difficulty involved in overcoming the nations which line the Mediterranean's shores, a problem which hinders the execution of limited operations. The third point: while the earlier points found us completely in agreement with the author, his evaluation of the sea-going threat in the Mediterranean would seem just a bit exaggerated, especially in terms of surface ships. Without a doubt, Santoro must have difficulty accepting the ten to fifteen surface ships of the 5th Squadron. Indeed, he foresees a time when the Navy will eventually be

equipped with Squadrons of Tornados (currently the practice in West Germany), not to mention planes designed for embarkation on ships with flight-decks.

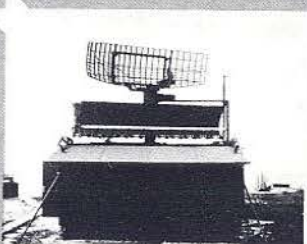
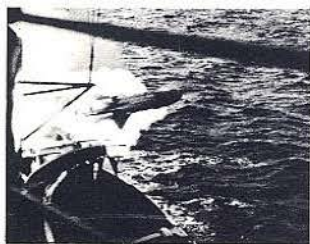
Two sections of the book were written by Luigi Caligaris, who conducts an examination into the problems found at the top levels of the political-strategic and military establishments, producing an interesting and well-documented comparison between the existing situation in Italy and the current state of things in the other Western countries. The study outlines the procedural and institutional changes which, according to the author, must be implemented in our country if we are to achieve both an effective coordination of the various components which make up security policy and an adequate level of crisis management. As a means of improving the present political-strategic leadership structure, the author proposes the creation of a National Security Council charged with providing advice and support to those responsible for political decisions. Everyone is in agreement on the need for this type of measure, or something along similar lines. The problem is where to place such a body institutionally. In the event, the decision-making procedures will be influenced by the special nature of Italy's political and institutional situation; and it would be best if the studies relating to constitutional reform also gave due consideration to the requirements of security policy and crisis management.

As far as the military leadership structure is concerned, the author is a decided proponent of interforce centralization. This is another point on which one cannot help but agree, especially as regards the areas of actual troop deployment, structural planning, research and development and supplies. The day to day experience, at times truly frustrating, which is all too familiar to anyone who has served in an interforce organ, leads the author to consider the policy of consolidation as something of a panacea for the current problems and woes of the military's top echelons. This may very well be true, though to my eyes such an outlook appears overly optimistic, underestimating, as it does, the complexity of a problem which is caused less by the structures involved than by the men. On the other hand, I am in complete agreement on the Defense General Staffs absolute need for a separate information and situation division, something it lost following the reform of the intelligence services.

The book, which makes a significant contribution to clarifying a number of key points concerning national defense and security, is fundamental to an understanding of some of the principal problems currently affecting the defense establishment. In addition it points to some highly interesting possibilities for eventual solutions.

Carlo Bess

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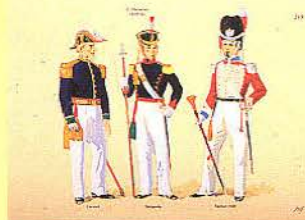
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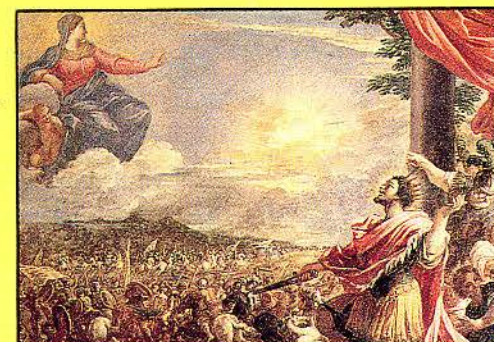
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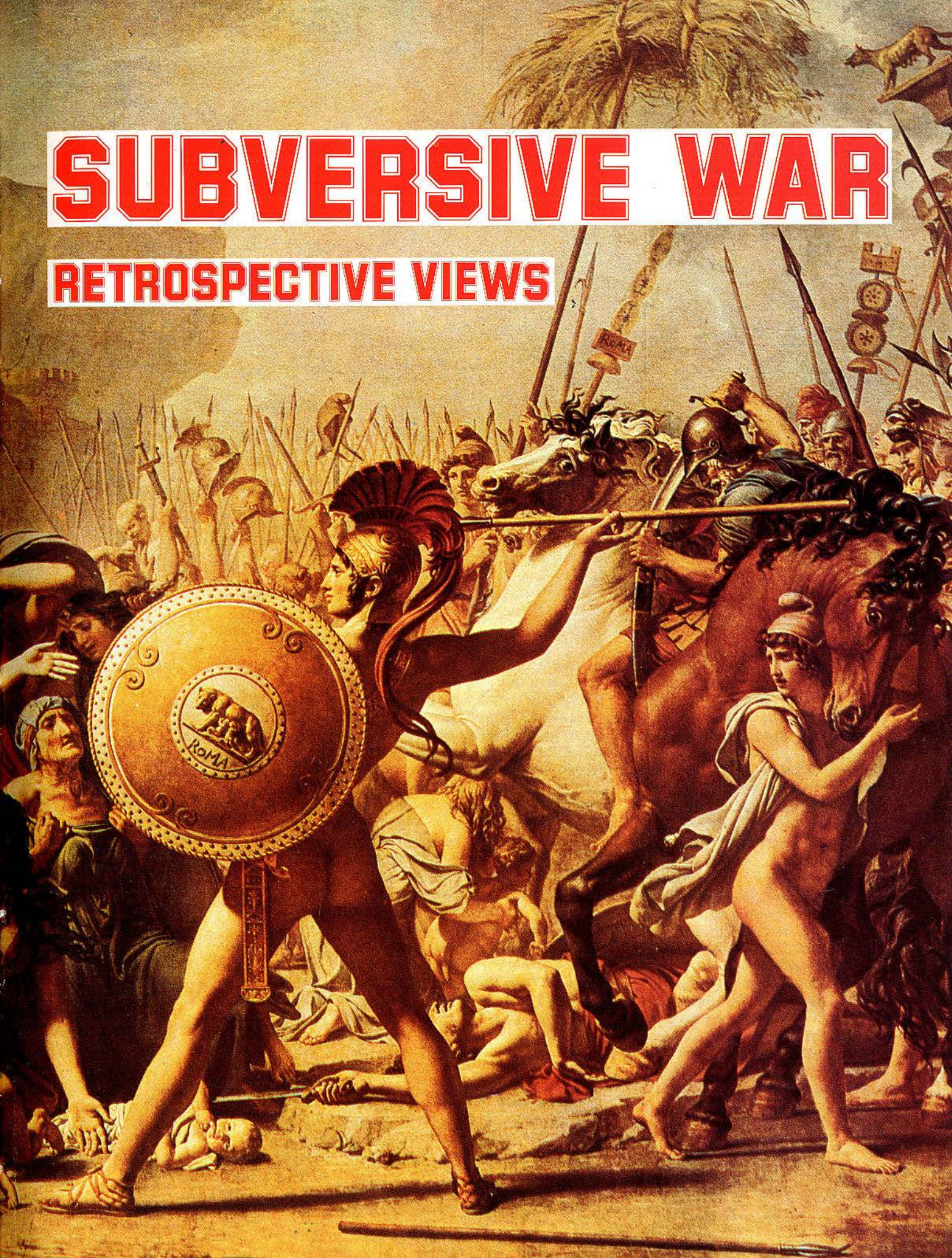


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SUBVERSIVE WAR

RETROSPECTIVE VIEWS



An approach to the concept of subversion in its essential aspects has already been made in a previous study (see no. 5/86 of "Rivista Militare").

In particular, the lexical definition of the phenomenon is recalled, according to which subversion (or overthrow) must be understood as the "upturning of a traditional order, often associated with the idea of a degeneration and corruption of values".

That particular form of armed conflict which is subversive or insurrectional war also clearly falls within the context of this definition.

A type of war as old as time, as the numerous examples to be found in history demonstrate.

A type of war which must be understood as an armed struggle within a territory against the authority constituted by one part of the inhabitants, whether supported or not from the outside, with the purpose of removing control of the land from the authority in charge or – at least – in order to gradually paralyze it.

As such, subversive war was, and still is, generally considered as the only way to fight against foreign rule or to overthrow a dictatorial regime.

Present and past – despite the good will of governments and politicians, evident in several solemn statements of principle, not unlike the one contained in art. 11 of our Constitution ("Italy repudiates war as an instrument of offence to the freedom of other peoples and as a means for the solution of international disputes") – show how the phenomenon has persisted and how it has influenced the history of peoples. To this end, it is sufficient to call to mind the following, amongst the many cases of political systems originating from subversive combat, developing into full conflict:

- the independence of the Netherlands;
- the institution of the parliamentary regime in Great Britain;

- the independence of the United States;
- the independence of almost all the states in South America;
- the fall of the Ottoman Empire.

The effectiveness of such a type of conflict, although it has often been repeated and is not inferior to the so-called classic conflicts, was not – unfortunately – deemed worthy of the interest and attention of historians and – above all – of military scholars.

Clausewitz, in his treaty on war, dedicates an entire chapter to what he defines as "wars of the peoples", but he limits the study to action against foreign invasion. Nor did the matter have any greater luck with Clausewitz's successors in the field of military study.

The main reasons for the essentially negative attitude towards an uncomfortable form of combat like subversive war, which is entirely unorthodox, are diverse. One can mention, on the one side, the diffidence and "uneasiness" which military men and other war scholars have always felt in the face of a type of conflict which does not respect the classical principles and customary procedures in the conception and conduction of operations. From another standpoint, one ought also to bear in mind that, especially in a Europe which was as stable in its state system as that of the XIX century, any reflection upon a form of war which generally – above all in the early phases – comes into being through episodes of little importance, was viewed with a sense of intellectual "irritation" because it distracted minds and efforts from the study of the traditional "external" conflict. And, what's more, this type of combat entailed both communities and individuals,

Subversive war was, and still is, generally considered as the only way to fight against foreign rule or to overthrow a dictatorial regime.

accustomed to order, having to concentrate their attention on the study of factors of conflict inspired by "disorder" and the overthrowing of customary actions and behaviours.

However, the events of 1917 in Russia sparked off unexpected interest in revolutionary war. Thorough studies were performed and new incentives resulted, favouring the appearance of the insurrectional war in Asia, since 1921.

Western military circles have dedicated greater attention to subversive war primarily as a result of the various forms of "resistance" movements which developed during the first and, mainly, second world war.

It was therefore possible to trace back over the course of this phenomenon in history, in order to draw out the constant factors and to analyze their development in the various eras and in the different countries.

Rome, the Middle Ages and the modern era, the XIX century – examined from the point of view of the conflict of a State's armed forces with armed internal opposition movements – are found to have several constants in their origins, preparation, outbreak and in the conduct of subversive wars and counter-revolutionary fights. Some examples will confirm the soundness of the thesis.

The **Roman era** is rich in examples of subversion, deriving from opposition either between state authorities and the population, or between the wealthy classes and working classes.

Among the former, one can recall the revolts of xenophobic nature which broke out in countries subjected to Roman power.

Lusitanians and Celtoiberians fought ruthlessly with the Roman legions from 154 to 133 B.C. in the Iberian peninsula. The risks for Roman rule were serious, especially beginning from 147 B.C. when the rebels found in Viriato a leader of



Delacroix: The Lion Hunt, Boston, Museum of Fine Arts.

Variation of a theme which recurs numerous times in the work of the artist. In the savage violence of the wild beasts and of man exposing himself to death in order to win, the artist sees the symbol of life: life as a struggle, as a contrast between primary impulses and rational will.

great skill and prestige, who fought the invaders with a bold and fast guerrilla war.

In Numidia from 112 to 105 B.C., Jugurtha – with the support of the local peoples – fought bitterly against the rule of Rome, in a war which in the “Bellum Jugurthinum” by Sallust has a political rather than a military account.

In Greece too – where there were even many who were persuaded that the Greek nation

might find in Roman rule not its end but its rebirth – there were two typical cases of insurrectional conflict. The first was in 146 B.C. under the direction of the League of the Achaeans, a city federation established between 280 and 270 B.C. which, after a long pro-Roman period, rebelled against Rome because the poorer class, at a time of economic crisis and social contrast, accused Rome of favouring landowners for the various local governments. Pausanias and Polybius, the only sources of information on this conflict, discuss both it and the deeds of Critolaus, the recognized leader of the league, as an amazing display of bravery which, coupled with weakness, borders on madness. And, with reference to the rapid success of

the legions of Quintus Caecilius Metellus before and of Consul Mummius afterwards, Polybius reports that the Achaeans had all understood that if they had not lost immediately, they would never be saved.

The second case came to being in 86 B.C., when – owing to the effect of the increasing subjection to the Romans – the Greeks of Asia rose up led by Mithridates and Athens, encouraged by Aristion, took part in the fight which ended with the siege and reconquest of Rome under the leadership of Sulla.

The more or less latent xenophobia relights at times in the history of Rome, owing to the desire for equal dignity and other examples of subversion thus resulted. Among them the following can be cited.

The "social" war which the Italic peoples conducted from 91 to 82 B.C. against Rome, which refused to recognise their rights, and primarily that of citizenship, despite their loyalty, for which they claimed the unity of the Roman-Italic peoples.

Similar factors were at the basis of the Pannonian revolt (6-9 A.D.) and the parallel insurrectional turmoil of the Germans, amongst whom P. Quinctilius Varus, Augustus' ambassador, wanted to introduce the rules of law, changing the country's customs. And Arminius, a German prince who knew the Roman legions well and with whom he had spent long periods, with the ambush and massacre of Teutoburg, still today constitutes a typical example of subversive fighting, in its destructive forms of deception and violence (9 A.D.).

The repressed desire for independence is at times accompanied by a religious feeling. This was the case of the insurrectional revolt of Judaea against Rome, between 66 and 70 A.D..

A bitter struggle, ended by Titus in 70 A.D. with the destruction of Jerusalem, which occurred after five months of relentless fighting, from April to September. A fight which, even after the fall of the fortress of Masada and the death of the last Zealots (April of 73 A.D.), did not succeed in diminishing the messianic hopes and the proposals of revolt.

Some subversions of a social or religious nature fall into the second category, that of the antagonism between the wealthy classes and the poorer ones.

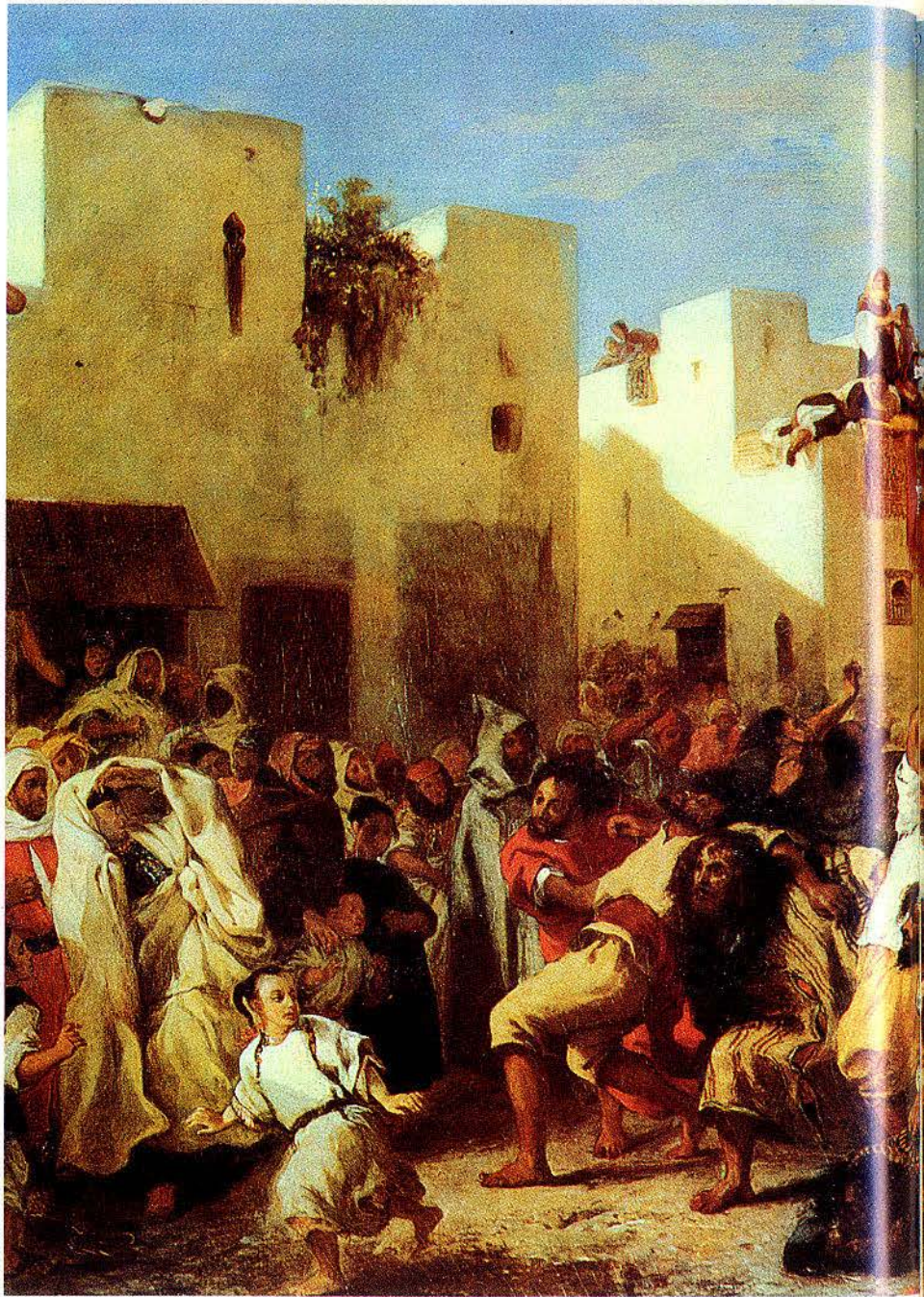
The rising of Spartacus and the war of the slaves, during the years from 73 to 71 B.C. is a symbolic expression of this.

The existence of an irreparable fracture within society, provoked in many cases by the magistrates injustice and abuse of power and furthermore by the greed of tax exactors, often pushed the rural masses and

the poorer ranks of the town populations into subversive conflict. Beginning from the III century A.D., racial antagonism, the hate towards Rome and Latinism were the primary causes of the subversion against Rome in Africa, Asia, Italy and in other European regions. The hate against Roman occupation often cemented the union of all the classes, up to a point where internal hostility among peoples and cities was overcome. A hate which was sublimated, raising

itself to "ideal" values, capable of galvanizing the popular forces and turning them into indomitable troops able to defend cities like Numantia (134-133 B.C.) or Jerusalem (70 B.C.) or of confronting the legions of Rome in the open field.

Common to all the above mentioned subversive manifestations, is the fact that – once the racial antagonism, political intolerance or religious fanaticism diminished – the subversions themselves ended up losing the





Delacroix: The Restless of Tangier, New York, J. Hill Collection.

Like *The Women of Algiers*, this masterpiece also originated in the sketches and watercolours which the artist directly recorded on the theme or memorized on his journey through Morocco and on his return: the painting represents the frenzied religious excitement of the followers of Ben Yssa.

- existence of a racial, social, political or religious contrast;
- development of that reason for conflict owing to the weakness of the established authority or to the abuses of its representatives;
- exploitation of discontent by capable and skilled charismatic leaders;
- secret and detailed preparation of the movement;
- opening of the combat by surprise and conduction of the operations modelled on the features of the environment;
- duration and violence of the struggle closely linked to the support of the population, because of which the movements of a xenophobic or national nature and those of a religious background were found to be the hardest to overcome;
- Roman reaction based upon the combination of military effort and political action, with a single command.

The Middle Ages and modern times up until the French revolution manifested their own aspects in the field of subversion, even if – “*nihil novi sub sole*” – not entirely original.

The breaking down of the central power into a series of small local powers made national subversion increasingly rare and the frequency of lesser revolts of a political-social nature rose.

For the most part, it was a case of social inequalities which periodically throughout Europe caused the revolt of the masses of peasants, torn by misery from their resignation, and pushed them to fight.

For instance:

- in France, the Jacqueries, anti-feudal uprising of the peasants (given this name because the

support of the people and were rapidly repressed.

The second character common to the subversions against Rome can be identified in the fact that their outbreak generally coincides with a period of weakness in the central power. A weakness that on the one hand also entailed abuse by the authorities and the ruling classes, who stimulated the discontent of those who lay victim of it, and on the other favoured a certain impunity for the emerging

leaders of the rebellions.

The main insurrectional fights against republican Rome in fact coincided with the periods of fighting between the Senate and the popular forces. Similarly, the more serious subversions of the Imperial era almost all broke out in times of power voids.

The examples recalled so far and the observations made above allow one to note how the subversions present a rather repetitive pattern, which is found in the following factors:

nobility mocked the peasants with the name of Jacques Bonhomme) which broke out in the region of the Oise in 1358, reached such an extent that bands of 5000-6000 men were formed and found an able and energetic leader in a peasant named Guillaume Karle;

- in England, the peasant revolt which in 1381 took its name from the Lollards, wandering heretic missionaries who, by accentuating the anticlerical and communistic characteristics of John Wycliffe's teaching, were considered – more or less correctly – the instigators of the conflict.

Very different were the subversive revolts – during the same period – resulting from the aspirations of ethnic or economic groups to set limits on the arbitrariness of the "lords".

The conflict of the inhabitants of central Switzerland against the Hapsburgs (1291-1516), that of the Free Cities of Lombardy against the Hohenstaufens, which saw in Legnano the Lombard Valmy of the Middle Ages (1176), that of the English barons and Commons throughout the Middle Ages were all conducted by worthy leaders and by motivated and organized communities and often developed into ruthless and bloody fights.

From the beginning of the XV century up to around the middle of the XVII, the insurrectional revolt had new starting points in the religious feeling that had blossomed at times in the past and then become a factor of stability in many countries, to then turn into a serious element of antagonism and fight.

An early example of this was Bohemia where – under the banner of the Hussite heresy (after Jan Hus, founder of a religious movement which ended by embracing the reformist doctrine of the heretic Wycliffe), associated to the blind particularism and under the impulse of leaders of great prestige like Jan Zizka – a long struggle against catholicism and legiti-

mate dynasty developed from 1419 to 1433.

Following this, with the XVI century, the eruption of the reform caused a dangerous rupture in the religious unity of Europe. Subversion, religious in its essence became, in relation to the position and prestige of its leaders, a social and political phenomenon.

The "war of the peasants" (1520-1525) and the "revolt of the Camisards" (beginning of the XVIII century) in Germany and in France respectively, are further classic examples of combat in which religious reasons and social motivations are interwoven.

Thomas Münzer, German Reformation preacher, in both a religious and a social sense, and Jean Cavalier were its strong and fanatical leaders.

The former (executed in 1525) played mainly on the right to work and on the rejection of any authority whatsoever which was not elected (Memmingen charter); the latter organized the Calvinists of the Cévennes in a fight against the armies of Louis XIV, after the abrogation of the Edict of Nantes (18 October 1685) owing to which all the prerogatives granted to the Calvinists by Henry IV in 1598 were suppressed. And Marshall de Villars succeeded in defeating the guerrillas conducted by Cavalier by accompanying military action with the offer of impunity and personal advantages for Cavalier himself, who had fled to Switzerland.

The so-called "wars of religion" of the same period (XV-XVII century) were also in reality subversive political fights, which were to find backing in the

The "war of the peasants" (1520-1525) and the "revolt of the Camisards" (beginning of the XVIII century) in Germany and in France respectively, are further classic examples of combat in which religious reasons and social motivations are interwoven.

religious antagonisms.

In France, in Germany, in England and in the Netherlands, leagues and unions were set up: Calvinist Union in France, Protestant League in Germany, Parliamentary League in England and League of the Gueux in the Netherlands, where the political and religious parties joined together under this name and began the anti Spanish movement in 1566.

Princes and noblemen, because of ambition more than true conviction, often lent their support to these communities, transforming them into true political and military organizations.

This is the case of William I of Orange "the Silent One" (1533-1584), of Henry of Navarre (1503-1555), of the Palatine Elector (Ludwig V, Frederick II, Otto Heinrich, follow one another in the rule of the Palatinate from 1508 to 1559).

All these "wars of religion" were not true people revolts because mercenary forces paid by the princes were operating in the opposing fields, alongside the town or peasant troops.

They aimed primarily at possession of the cities (Paris, La Rochelle, Dresden) and ended up turning themselves into attrition struggle, whose duration depended mainly on external aid, motivated solely by political aims.

It was in this way – for instance – that the Duke of Anjou, a Catholic prince, backed the protestants of the Netherlands and Cardinal Richelieu negotiated the French aid to the German protestant princes against the catholic house in Austria.

The English civil war was also far more political than religious. It arose from the conflict between Charles I (King from 1625 to 1649), who wanted to re-establish absolute power for the sovereign, and the members of parliament who wanted to preserve their control over the monarchy.

Anglicans, Catholics and the majority of the nobles marshalled up around the King; the mass



Delacroix: Liberty Guiding the People, Paris, Louvre Museum.

This is almost a political propaganda poster, full of rhetoric, and yet it is so authentic and so passionately illustrative that it redeems itself and is convincing: the artist, who did not participate in the July days, portrayed himself in the figure of the rebel with the rifle.

of the wealthy classes, the small rural property owners, the puritans and the independents constituted the parliamentary army. The charismatic leaders of the opposition to the King were John Hampden, John Pym, a very skilled parliamentary tactician and – above all – Oliver Cromwell, who drew unshakable energy from his ardent puritan faith.

It was precisely due to the spirit of religious fanaticism that Cromwell was able to instil into

the forces he commanded, that – after three years of ups and downs – the decisive victory of Naseby (14 June 1645) determined the triumph of Cromwell, with the tragic sequel of the decapitation of Charles I (9 February 1649).

Forerunner on the military plane because he was able to model the rebel forces along the lines of the regular armies of the era, Cromwell was also a political pioneer. With the execution of the King, he wished in fact to demonstrate that power was not of divine origin, but rather a result of the people's will.

Around a century later, the colonists of America and the revolutionaries of France, took up and applied his teaching.

The former began to rise up in 1766 to reject the new tax on trade which had been imposed by London, but was not approved by the local representative bodies.

A period of crisis, agitation and trouble followed, lasting from 1766 to 1773, and developed – in Philadelphia in 1774 – into the constitution of a federal republic and an insurrectional war. The latter very soon took on the look of an external conflict because the inhabitants of the thirteen American colonies were only to feel – the large majority of them – increasingly more American and less English.

A long and fragmented struggle, led by the British army with troops who were too widespread and operated accord-

ing to the conventional and "stiff" procedures of the time against formations which were only able to conduct – by surprise – rapid operations of a small size, ending with the surrender of Yorktown (19 October 1781) and with the Peace of Paris (13 September 1783) which sanctioned the independence of the United States.

So, from the Middle Ages to the eve of the French revolution, the subversion was conducted in the name of social equality, of religion and of political freedom, were numerous.

The first were largely failures, since as they were restricted to an undeveloped peasant and working class, they lacked organization and military strength.

In the others – however – the rebels were successful, at least with regard to their basic vindications, thanks to the backing of all the social classes, including the highest, the only rank able to guarantee an ideal, an organization, a military force and charismatic leaders to an insurrectional movement.

The ideas and values which were asserted in the American War of Independence were certainly influential in the outbreak of the French Revolution in 1789. But the latter was soon to assume a character of universality, perhaps favoured by the hostility of the European nations, in coalition against a movement which intended to crush the rights and traditions of sovereigns, nobility, and clergy.

In the wake of the Armed Forces of the Republic and later of the Empire, the principles of the Revolution – freedom, equality, brotherhood – spread throughout Europe and elsewhere, causing, like the Reform of a couple of centuries earlier, violent antagonism. The following subversive or insurrectional revolts were more or less direct results:

- the colonies of South America against Spain from 1806 to 1825;

- Poland against Russia in 1830;
- the early events of the Italian Risorgimento in 1821, 1830, 1848;
- Hungary and Bohemia in 1848;
- the Balkans against the Ottoman Empire during the entire XIX century.

In all these XIX century conflicts, although they may differ in causes and aims, several common factors can be found.

Of these, which often recall those found in the previous centuries, and are repeated even during times nearer to us, the following can be considered predominant:

- firstly the "weakness of power" which has always favoured, and will always favour, the outbreak and development of subversion;
- a second factor catalyzing subversive events is the existence or rising of a widespread hostility against the established authority;
- a third "constant" is the difficulty encountered in uniting and setting up the different elements of opposition to power, to the point where they are efficiently amalgamated, overcoming individualism and particularism;
- a fourth common element may be identified in the tendency to build true armies and in the attempt, even if not always achieved, to conduct operations

The particular importance given to the subversive and insurrectional fights of the XIX century, even though it is a phenomenon true to the entire history of mankind, a phenomenon which unfortunately continues to project its dim light even in our own lifetime, leaving little space for optimistic forecasts for the future, is justified by the observation that – in one hundred years – the subversive war has strongly influenced the political system of Europe and the rest of the world.

with the precise criteria and procedures of classic conflicts;

- a fifth factor, almost indispensable, is constituted by the necessity and by the incidence of a consistent external assistance, be it military, moral or diplomatic, expressed in a direct or indirect manner;

- a sixth characteristic, mostly inherent in the conflicts of the XIX century, is the almost exclusively military form of repression, with the general exclusion of those political means which had even been shown to be rather fertile with results in the preceding centuries.

The particular importance given to the subversive and insurrectional fights of the XIX century, even though it is a phenomenon true to the entire history of mankind, a phenomenon which unfortunately continues to project its dim light even in our own lifetime, leaving little space for optimistic forecasts for the future, is justified by the observation that – in one hundred years – the subversive war has strongly influenced the political system of Europe and the rest of the world.

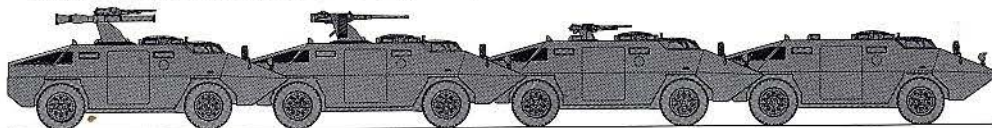
It has done even more because it has contributed, almost everywhere, to the evolution of a still semi-feudal and patriarchal society towards new forms of equality and individualism. It has therefore aided in the development of democracy, that is, in a new form of government which no longer places the origin of authority and power in a supernatural right but in the people.

With the beginning of our century – the XX – only the Tzar of all Russias continued to have no wish to acknowledge the now affirmed truth, and fatally went towards the drama of that October 1917 revolution, of which – according to the historian Jean Marabini – the "subversive melodrama" of Rasputin's death was a kind of "ouverture".

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EAST - WEST

ECONOMIC RELATIONS AND PROBLEMS IN THE TRANSFER OF CRITICAL TECHNOLOGIES



Security is not an exclusively military concern. It also involves a complex of political, cultural, economic and technological relations between countries and, in particular, between the West and the Soviet bloc. In this case, the economic and technological sectors involve very delicate issues. Increasing economic resources deriving from trade with the West mean that the Soviet Union can also step up its military effort, while the transfer of technologies can pave the way for qualitative improvements in the Soviet arms system. The fact is that the West is making a financial and technical contribution to the enhancement of the Soviet threat through its trade with the Soviet Union. There is, however, another side to the coin: trading with the communist bloc represents an opportunity for the West to establish more regular, stable relations as well as obtaining material economic advantages that can eventually reinforce Western security.

The problem is to ascertain the extent to which trade with the East can affect NATO security negatively, and this is a very delicate question. During the last five years, economic and technological relations between East and West have created more problems and tensions within the Atlantic Alliance than between it and the Soviet Union (1). In certain periods, especially at the time of the Urengoy gas pipeline and the sanctions the United States adopted against its European allies, these tensions reached the level of a real crisis, coming to a climax at the 1982 Versailles summit and subsequently dropping after the 1983 Williamsburg and 1984 London summits. The tensions are still potentially there, for they are not merely contingent but also structural, involving certain basic differences in views and interests between Europe and the United States.

Prototype of the AMX close support aircraft, which in the second half of the '80s will renew the Italian line of reconnaissance fighter-bombers.

If the Alliance is to continue running smoothly we must recognize the differences between the various NATO countries, constantly comparing positions according to a pragmatic approach, seeking a "modus vivendi" and agreeing to disagree on some problems while at the same time seeking acceptable compromises on the most essential issues.

The pragmatic approach requires sound knowledge of the facts, flexibility and respect for each other's interests and viewpoints, and can bring about all the adjustments necessary to maintain a reasonably united front in the sector. Moreover, this unity is the necessary precondition for the political and strategic cohesion of the Alliance. There is no such thing as an economic NATO, nor is there a united economic strategy for dealing with the Soviet Union.

Some people maintain that not even the United States has a long-term policy on trading relations with the Soviet Union. The Kissinger approach, which viewed increasing trade exchange as a basis for normalizing relations between the United States and the Soviet Union, has now been abandoned, and the United States has since resorted to such classical tools for a short-term, contingent policy as embargoes and restrictions (2). According to others, restrictions on the transfer of American technologies are not really inspired by a strategic aim, i.e. to arrest the advance of the Soviet threat, so much as by commercial aims. In other words, the real aim would be to keep Europe out of the "Mecca" of United States technology which has already boosted the competitiveness of European industries in the markets of the developing countries, and even in the American internal market, thus contributing to the huge deficit in the United States' balance of payments (3).

In fact, each member state of the Alliance decides on its own trading policy with the East, in terms of the sovereignty and autonomy deriving from the

degree of objective national independence it enjoys. Any attempt at international regulation of trade is viewed with suspicion by Europe and considered undue interference in its affairs in the name of issues like collective security. These issues are seen to belong to different spheres of interest that can even clash with commercial interests. Deterrence is collective and bipolar while detente, for which commercial relations are an essential catalyst, must remain multi-polar. Each state must handle the problem of detente independently, according to its own contingent interests, without undergoing the control of a major power like the United States over its economy; such control would transform United States leadership into hegemony.

The problem is further complicated by the different views that Europe, the United States and Japan (which is now an integral part of the Western system) have on the nature of the Soviet threat.

Excluding Japan, which is moreover something of an exceptional case, Europeans and Americans have different opinions on the very meaning of security and the relation between deterrence and détente. Moreover, the United States takes an overall view, while the European attitude is basically regional. Again, while the United States tends to see trade as a political weapon and give prime consideration to the political and strategic rather than economic aspects, the European countries tend towards the opposite attitude, viewing the fields as quite independent. Finally, there are very different interests at stake. Trade with the Soviet Union and the countries of Eastern Europe, and in particular between Western and Eastern Germany, is of far greater importance for Western Europe than for the United States, which limits itself to exporting agricultural produce to the Soviet Union. On the other hand, the countries of Europe import raw materials and energy products from the

Soviet Union and export mainly industrial products.

The four areas we have so far mentioned – the meaning of detente and trade with the Soviet Union; overall versus regional assessments; the political-strategic or essentially economic view of trade with the East; the importance and type of commercial interests – are dealt with below, with particular attention to the European and American viewpoints. We shall then go on to examine the ways in which the West has tackled these problems, achieving adjustments and compromises despite the efforts and difficulties involved. Although these compromises are only partial and leave either side somewhat dissatisfied, they have had the positive effect of limiting the consequences of tensions and commercial disputes on the political and strategic cohesion of the Alliance.

DIFFERENCES IN THE WESTERN EUROPEAN AND AMERICAN ATTITUDES TOWARDS TRADING RELATIONS WITH THE USSR AND THE OTHER COMECON COUNTRIES

TRADING RELATIONS, DETENTE AND SECURITY

The 1967 Harmel Report described the coupling of "deterrence-détente" as the basis for the Western security system. Thus it stated that increased relations between NATO and the Warsaw Pact countries was the fundamental means to reduce antagonism, establish mutually advantageous relations and, in the long term, tone down political-strategic confrontation and reduce the risk of a Soviet attack in Europe. On this subject, the Harmel Report referred to some ideas already put forward in the doctrine of containment and subsequently elaborated in the Final Act of the 1975 Helsinki Conference on Security and Cooperation in Europe (CSCE). During the conference, the issue of economic cooperation was

elevated to something like a holy creed (4).

The following points received particular attention in the West:

- an improvement in the standard of living in the Soviet Union is an indispensable factor for lasting détente ("better a fat Russian than a thin one");
- development of trade means economic interdependence between the two blocs. Apart from constructing relations and mutual understanding and reducing preconceptions, distrust and suspicion, it lays the basis for economic solidarity and relieves political-strategic tensions significantly;
- the development of trade with the West and improved standard of living will favour the spread of liberal attitudes within the Soviet Union, leading not only to the vindication of civil rights but also to a positive "contagion" of freedom. The result would be progressive change in the power structures in the Soviet Union and a reduction in the degree of militarization of society and the economic system which lies at the basis of both the predominance of the Party and the possibility of mobilizing the human and economic resources necessary for the enormous Soviet military machine (5). Only increased trade with the West could lead to radical changes in the Soviet economic system as it stands today – a war economy in peace-time, with 12-15% of the gross domestic product diverted to military expenditure (6).

From this point of view military deterrence should remain a merely short-term aim, and the demands and prospects of détente, which remains the medium- to long-term objective, should absolutely not be sacrificed to it.

During the period of détente and important agreements between the United States and the Soviet Union on arms control, emphasis on the desirability of increasing trade with the Soviet Union took on ideological connotations in the United States where its value as a vehicle

for freedom and greater security was strongly advocated. The European countries, however, adopted a more pragmatic approach: to begin with, they did not believe in the possibility of a real change in the regime or in the Soviet threat; moreover, they were primarily interested in the prospects of economically advantageous exchanges; finally, in keeping with their long-standing traditions, they considered economics and politics separate spheres.

The American "ideological" attitude did not survive the crisis in détente that developed in the mid-seventies and came to a climax with the American economic sanctions decided on after the Soviet invasion of Afghanistan. While the European attitude remained basically unchanged, the Americans performed a 180°-turnabout and became equally radical in the opposite direction. Any improvement in economic conditions in the Soviet Union amounts to greater chances of stepping up their military power and the Soviet threat to the West. According to this attitude, which prevailed from the mid-seventies on and gained much ground with the Reagan Administration (7), increased exchange with the Western countries would represent a more or less direct but at any rate significant contribution to the Soviet military effort, and Western security would lose out. In particular, the Europeans would gain considerable economic advantages which would balance out the negative results for the United States; however, it is the United States that incurs considerable costs and risks to guarantee protection from a Soviet attack in Europe.

Thus we return to the conditions of the "cold-war" period, but with a big difference. Then there were no fully consolidated interests, while trade between Europe and the East has made great strides forward during the period of détente and, as a result, clearly defined interests have arisen and the so-called "Soviet lobbies" exert pressure on the politicians.



The United States AH 64 "Apache" helicopter, photographed in stationary flight, is the most sophisticated among battle helicopters.

Western trade (the OECD countries, including Japan) with the Warsaw Pact countries has risen to about 75 billion dollars a year, representing 30% of all the Soviet bloc's international trade (though only 3-4% of the OECD countries').

The main Soviet imports are food (about a quarter of the total), above all from the United States where there is the most powerful "Soviet lobby"; it was this lobby which forced Reagan to stop the grain embargo introduced by Carter after the Afghanistan invasion. Soviet exports to the OECD countries consist mainly of energy products, which exceed 70% of the total. Trade with the East (3-5% of exports from Western European countries) does not render Western Europe particularly vulnerable. According to a research carried out in Western Germany, only 222,000 jobs

depend on exports to the East, and 90,000 on imports from the East, amounting to about 1.3% of the German labour force (8). Not so very much, after all. A halt in trade relations would have more negative repercussions for the Soviet Union than for Europe.

It must be remembered that it was certainly not "ideology" that boosted trade with the Soviet Union and the countries of Eastern Europe during the period of détente. What really got it going were the credit conditions granted by the West, often over the long term and entailing appetizing financial advantages. Factors hampering the steady, lasting development of trade relations were: the oil crisis, which represented a real blow to Europe's credit capacity; the artificial nature of trade relations based on the systematic credit concessions offered by the exporting countries; the qualitative gap between the European and Soviet economies, the latter offering only raw materials and semi-manufactured

goods produced with great expense of manpower; non-convertibility of the rouble and lack of flexibility due to the centralization of the Soviet economy. Since the late eighties there has been a halt in the expansion of trade, followed by a distinct drop (25-30% in four years). This was not the result of political positions, but reflected hard economic realities. Intensive trading can only be conducted in conditions of equilibrium deriving from homogeneous, complementary economic systems. It was also with the aim of aiding European industrial exports, as well as diversifying sources of energy supply, avoiding excessive dependence on the OPEC countries, that Europe decided to accept payment for imports from the West with the export of Siberian gas at the end of the seventies. It was precisely on this point that contrasting attitudes and tensions began to build up between Europe and the United States. The US put pressure on Europe to reduce exchange of goods

at the very moment when a natural reduction had began to occur as a consequence of the effects produced by the different economic structures in the two blocs.

OVERALL VERSUS REGIONAL VIEWS OF TRADE WITH THE EAST

The United States has an overall view of security, and so also of détente. The Europeans have an essentially regional view, limited to Europe. Thus they hold détente to be a separate phenomenon which can survive increased tension and Soviet military initiatives in other parts of the world. Moreover, the Western European countries assume that trade can have a certain impact on the solidity of the Soviet empire in Europe. In fact, as a result of both traditional exchange patterns and the increasingly complementary nature of the economies, the expansion of trade and concession of easy-term credit to the Eastern European countries can lead to differentiation within COMECON, thus at least preventing the total integration of the economies of the Eastern European countries with the Soviet economy.

Last but not least, the European conception of the Soviet threat is very different from the view prevailing in the United States. The European view is more pragmatic, less influenced by ideological issues. The vision of the Soviet Union as the "evil empire" is alien to the European mentality. This is not to say that the Europeans are unaware of the risk that the West may be making a financial contribution to the Soviet military effort. However, thanks to their experience stretching back over history, they are well aware that, except in conditions of extreme crisis, mercantile states have never succeeded in subordinating economic interests to politico-strategic considerations and are even sceptical about the real strategic importance of trade with the East so long, of

course, as it does not involve technology directly geared to military aims.

THE MEANING OF TRADE WITH THE EAST

The United States claims that Western exports, including those of no direct military utility, strengthen Soviet military power and undermine Western security, or at least compel the West to bear a greater financial burden for its defence. In fact, exports mean an increase in the resources available to the Soviet Union, and this in turn means that the military apparatus will have less effect on consumer goods production. Since military expenses represent a huge burden, and can only increase at the risk of an internal crisis for the Soviet regime, it would be both possible and advantageous for the West to use trade as a means to compel the Soviet Union to cut down on military expenditure. According to the United States, however, the negative effect of exports to the Soviet Union is above all qualitative. Using Western technology, the Soviet Union would save between 8 and 13 billion dollars on research and development and could thus reduce by 5-8 years the time it would take with its own advances alone to level off the technological gap between the Soviet and Western arm systems (9).

The countries of Western Europe, on the other hand, tend to believe that only exports of direct military utility increase the Soviet threat. A drop in trade relations with the West cannot, in their opinion, bring about a reduction in the Soviet military effort. Lately, however, their attitude has come rather closer to that of the United States, and they have shown greater awareness of the risks that trade relations can entail for their security, given the particular structures of the Soviet economic system.

In the Soviet system, military expenditure is among the main economic priorities. The demands

of consumption are met with only when all demands for military expenditure have been satisfied. Priority is given to investments in heavy industry and defence. The Soviet industrial military complex, unlike that of the United States, does not represent a partial, artificial superstructure, but is an essential part of the system itself. The Soviet Armed Forces have absolute priority in the allocation of resources and figure in every facet of economic life. Moreover, unlike the Western system, Soviet industry can very rapidly be adapted to military production. In 1971 Brezhnev stated that 42% of the production of Soviet military industry was in the field of consumer products. The Ministry for general mechanical construction-work manufactures both missiles and refrigerators, and this, by the way, represents a real hazard for the West. There is something quite humorous about proposals for the reconversion of the Western arms industry, occasionally advanced by well-intentioned people in Italy as well, when one considers that the situation in the Soviet Union is of convertibility in the opposite sense. Western Europe has been gradually waking up to this fact, too.

Above all, European countries have shown a greater awareness of the risks inherent in transferring industrial capacity and technologies which can directly enhance Soviet military power.

It is, of course, true that they have not fully accepted the United States' concept of security, which they consider too exclusively military, even when economic issues are at stake. They assume that economic cooperation can survive crises in détente, and are inclined to make a clear distinction between trade that can only indirectly enhance Soviet military power and trade benefiting it directly. However, they are showing an increasing readiness to consider the whole range of security problems involved in East-West trade: not only



Belgian Army tank waiting in ambush during an exercise.

limitation of energy dependence on the Soviet Union and control of transfer of militarily significant technologies, but also limitation of easy-term credit for exports. The credit question actually seems to be more a matter of reckoning economic risks than a question of political and strategic risks; there is, for example, the risk that credit cannot be refunded, as well as a general reduction of credit capacity in the West due to the economic crisis. There is, however, a certain concern among Western European countries that the United States may tend to lay down restrictions on the system of Western economic relations to strengthen their supremacy in the Alliance. This would obviously be unacceptable for the Europeans.

THE INFLUENCE OF COMMERCIAL INTERESTS

As we have already pointed out, there is great disparity between the European and

American interest in developing trade with the Soviet Union and the countries of Eastern Europe. This disparity is not only qualitative – actually, the United States only exports agricultural produce and the Soviet lobby is powerful because of the concentration of interests, but at the same time localized – but also quantitative. The overall European percentage of trade with the Soviet Union, in terms of exports, is more than double that of the United States, even though it does not on the whole reach very high figures. While about 1.5% of America's total exports are to COMECON countries, the European figure is around 3.5% (at times touching on 5%) (10). Apart from agricultural produce, moreover, the bulk of this trade involves technology-intensive products, especially industrial plants (11). However, between 1970 and 1981 the high-tech products represented a steadily decreasing proportion of exports to the Soviet Union (from 16.2% to 8.3%), while remaining at more

or less the same level for the other COMECON countries (from 11.8% to 10.7%) (12). This appears to be due not so much to improved technological performance in the Soviet Union as to the fact that the social and economic context does not invite much in the way of high-tech. The exception is, in fact, the military sector, where demand is able to condition supply just as it does for all products in free market societies where competition and the decisive influence of demand represent a powerful stimulus for improvements in supply services.

WESTERN INITIATIVES SUBSEQUENT TO TENSIONS OVER THE GAS PIPELINE CONTROVERSY

The gas pipeline dispute, coming hot on tensions deriving from the US embargo on Poland after the decision to apply martial

law in that country, caused considerable friction between the United States and Western Europe and shook the Alliance's political cohesion.

These events showed Western governments how important it was to make a joint examination of the problems of trade with the communist bloc. This led to a series of studies in the various sectors concerned. Apart from their practical effects, i.e. better coordinated trading policies among the Western countries, they also greatly helped to clarify the various positions and reduce clashes of interests and tensions, thus eliminating the risk of a thoroughgoing trade war between the United States and its European allies.

As there is no single institute working on economic strategy vis-à-vis the East, the approach has been piecemeal, involving various decisional organs each working in its own field.

In the NATO field two studies were carried out: one on the general military implications of East-West trade; the second on the technological capacity of the Soviet Union in the military sphere. Although they did not directly lead to any operative decisions being taken, both studies did much to improve the quality of information available to the countries belonging to the Alliance. The second study was of particular help in laying the basis for combined analyses offering guidelines for the policies of individual countries. It also made governments far more aware of the strategic importance of technological transfer and gave the European countries a more serious approach to the strategic implications of trade with the Warsaw Pact countries and led them to take steps to safeguard technology when it is critical for defence.

The International Energy Agency (IEA) carried out the study which had the most far-reaching practical consequences. It aimed at evaluating the vulnerability that could accrue to the West as a result of depending on energy products

imported from the Soviet Union, above all natural gas. The problem appeared more manageable in the light of the fact that Western Europe depends on the Soviet Union for only 5-6% of its energy requirements (but the percentage rises to 30% in the case of natural gas) and that, if the Soviet Union were to halt the flow of natural gas it would lose its main sources of convertible currencies (the second source is arms exports to the developing countries which are, however, critically short of liquid assets). Moreover, the recent plunge of oil prices in the world markets has further strengthened the standing of the West and weakened that of the Soviet Union. In fact, 1985 saw a 14% drop in Soviet exports of energy products to the West which cost Russia 5-7 billion dollars in convertible currencies (13). The study represented a compromise between the American and European positions. Pointing out the risks run by Western Europe in depending excessively on energy from the Soviet Union, which could use supply as a strategic weapon by abruptly halting it and menacing Europe with economic crisis, the IEA report led Western governments to postpone the planned doubling of the Urengoy gas pipeline and to draw on it to the extent of only 26 billion cubic metres per year instead of the planned 40 billion. Moreover, the IEA study offered a coordinated context for the definition of alternative solutions that could be adopted from 1990 onwards, when reduced gas production in Europe will create greater interest in increasing imports from the Soviet Union.

The OECD (Organization for Economic Cooperation and Development) examined the problem of easy-term credit granted to the COMECON countries to import Western products. It was the study that had the least practical consequences as credit policy is one of the basic factors in the commercial policies of the individual countries. However, the interest

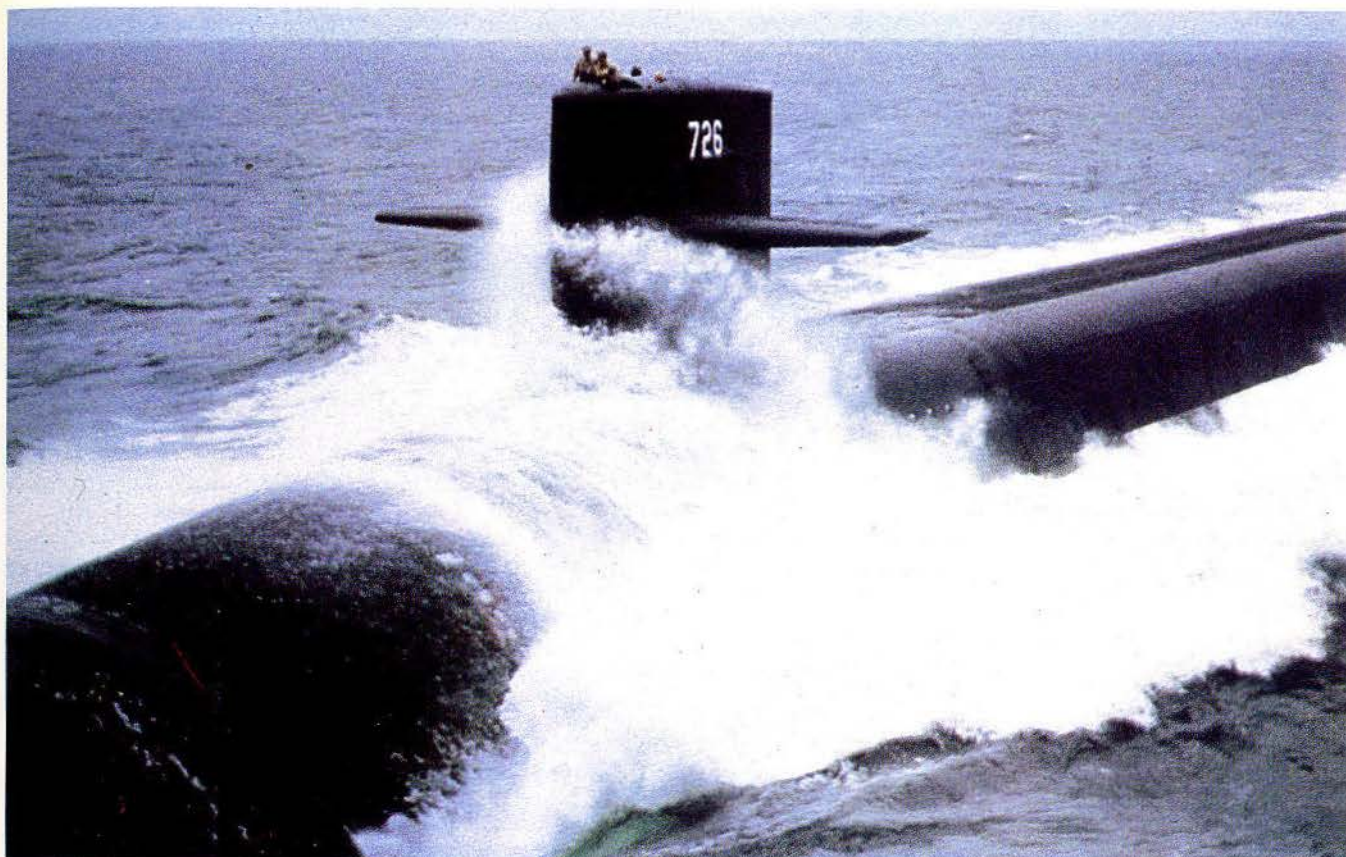
rates required of the Soviet Union have in general risen from 8% to 12.15% for credit of up to 5 years, and 12.4% for longer-term credit. This has caused considerable difficulty for the Eastern countries, given the drop in their exports to the West. Their foreign debt increased considerably in 1985, rising from 85 to 96 billion dollars (29 billion borne by Poland alone).

The basic factor in the influence of East-West trade on Western security is the transfer of technology that could lend itself to military applications. This is not only the most important point, but also the one most closely involving Western security in the short term. The problem has been studied in depth not only in the United States and by NATO, but also by the COCOM (Coordinating Committee), an organization for informal agreement working in Paris. Its member states (the NATO countries plus Japan) work out unanimous agreements on the transfer of strategically critical material to the Warsaw Pact countries.

The problem of control over technology transfer is not only extremely topical and vital, but it is also the cause of much debate between the United States and Europe. One reason for this is that, unlike credit and energy, it is a field where the United States has the means to enforce its line.

TECHNOLOGY TRANSFER

As was pointed out in the Perle report to Congress (14) and in a subsequent pamphlet published by the United States Defence Department to awaken public opinion in the West, the export of Western technology represents a considerable contribution to Soviet military strength. The security of the West rests on its superior technology. Giving the Soviet Union access to strategically critical technology "reflects a



United States "Ohio" submarine, which represents the peak of US technology.

limited, short-term view bordering on criminality" (15).

Western technological superiority has been eroded over the last 20 years. In the fundamental field of microelectronics, for example, the 10-12 year lead the West had in 1965 has dropped to 3-5 years (16). This problem is aggravated by the fact that in the West, for a number of reasons (the main ones seem to be the multirole capacity attributed to arms systems and the application of innovative technology which is often just taking off) there is a greater lag between technological innovation and its application to the current arms systems. It has, in fact, been calculated that out of 20 areas of strategically critical technology the West is superior to the Soviet Union in 15, equal in 5 and inferior in none. On the other hand, out of the 31 main categories of weapon systems and specialized compo-

nents (submarine detection, for example) NATO is superior in 17, equal in 10 and inferior in 4 (17). This is a truly serious state of affairs, since technological superiority is decisive. With small investments, as for example in the field of "stealth" where radar signals are reduced or suppressed, a technological advantage can neutralize the entire enemy defence or attack systems.

It is, therefore, manifestly clear that protection of Western technologies with military applications is crucial. Obviously, this protection can never be absolute or permanent. The aim should be to slow down the Soviet Union's acquisition of strategically critical technology and maintaining the gap in favour of the West, or at least compelling the Soviet Ministry of Defence to employ a larger portion of funds on research and development, thus diverting them from the supply of new arms. Even if the West could only succeed in compelling the Soviet Union to resort to illegal ways of acquiring new technol-

ogy, it would still be convenient to do so. It has been calculated that illegal acquisitions cost about 10 times more than legal ones. The difference in cost can be yet further increased by consolidating control systems and bringing heavier sanctions against those who break the regulations on critical technology transfer.

The need for the West to control its technology exports to the Soviet Union for the sake of security has always been recognized by the Atlantic Alliance. 1949 saw the founding in Paris of COCOM, an organization for promoting informal policy agreements among all the countries that were then receiving aid under the Marshall plan. This aid also included the transfer of advanced technology project and production capacity. 1951 saw approval in the United States of the "Battle Act", which laid down the guidelines for American legislation in the sector and, in particular, introduced extraterritorial sanctions for states and/or companies breaking US regulations (suspension

of aid, bar on all technology transfer, exclusion from American markets, etc.).

It was no great problem for European countries to accept these restrictions during the cold war period, not only because they fully shared the politico-strategic aims of the sanctions, given their sense of the incumbent threat of Soviet military might, but also because of American supremacy and the fact that Europe depended on American aid for its reconstruction. Finally, there was practically no trade between Western Europe and the Soviet Union, and therefore no consolidated interests.

With the advent of détente, controls were considerably relaxed and trade between Western Europe and COMECON was stepped up.

This situation began to change after the mid-seventies, when it appeared quite clear that détente did not mean any slackening in the Soviet military effort or any less intervention in the developing countries.

The 1975 Callaghan report established the principles for increasing collaboration across the Atlantic in the field of armaments and defence equipment and provided the basis for the *Memorandum of Understanding* between the various European countries and the United States to achieve the so-called *Two Way Street* to restore balance to military exchange between Europe and the United States. At almost the same time a study was carried out that remains fundamental; it is called the "Bucy Report" after the name of the leader of the work-group that drew it up (18). It pointed out that the Soviet Union is not interested in importing finished products or acquiring basic or general scientific and technological know-how so much as designs, detailed technological know-how and project and production capacity, especially in the fields of high precision, machine tools and industrial automation. Western concern should therefore focus more on advanced technology and in-

dustrial plants than on finished products. It is, moreover, becoming increasingly difficult to trace back the know-how that made it possible from the finished product (*reverse engineering*).

The Bucy Report also pointed out the need to assess the impact of Western technology on the military capacity of the Warsaw Pact, with particular attention not so much to the technological performance levels achieved in the West as the level reached in the East and likely future developments there. It is obviously pointless to set an embargo on even the most advanced technology if the Soviet Union has already mastered it, while there is a point in the case of technology the West has availed itself of for years and that many even be outdated if the Soviet Union has not yet succeeded in acquiring it. The so-called *Militarily Critical Technologies List* (MCTL) was drawn up on the basis of the findings published in the Bucy Report and is continually updated as technology evolves. It is kept secret, among other reasons to prevent the Soviet Union from acquiring useful information on what the West considers to be critical technologies. However, examination of the regulations on technological control within individual Western countries shows which areas are protected.

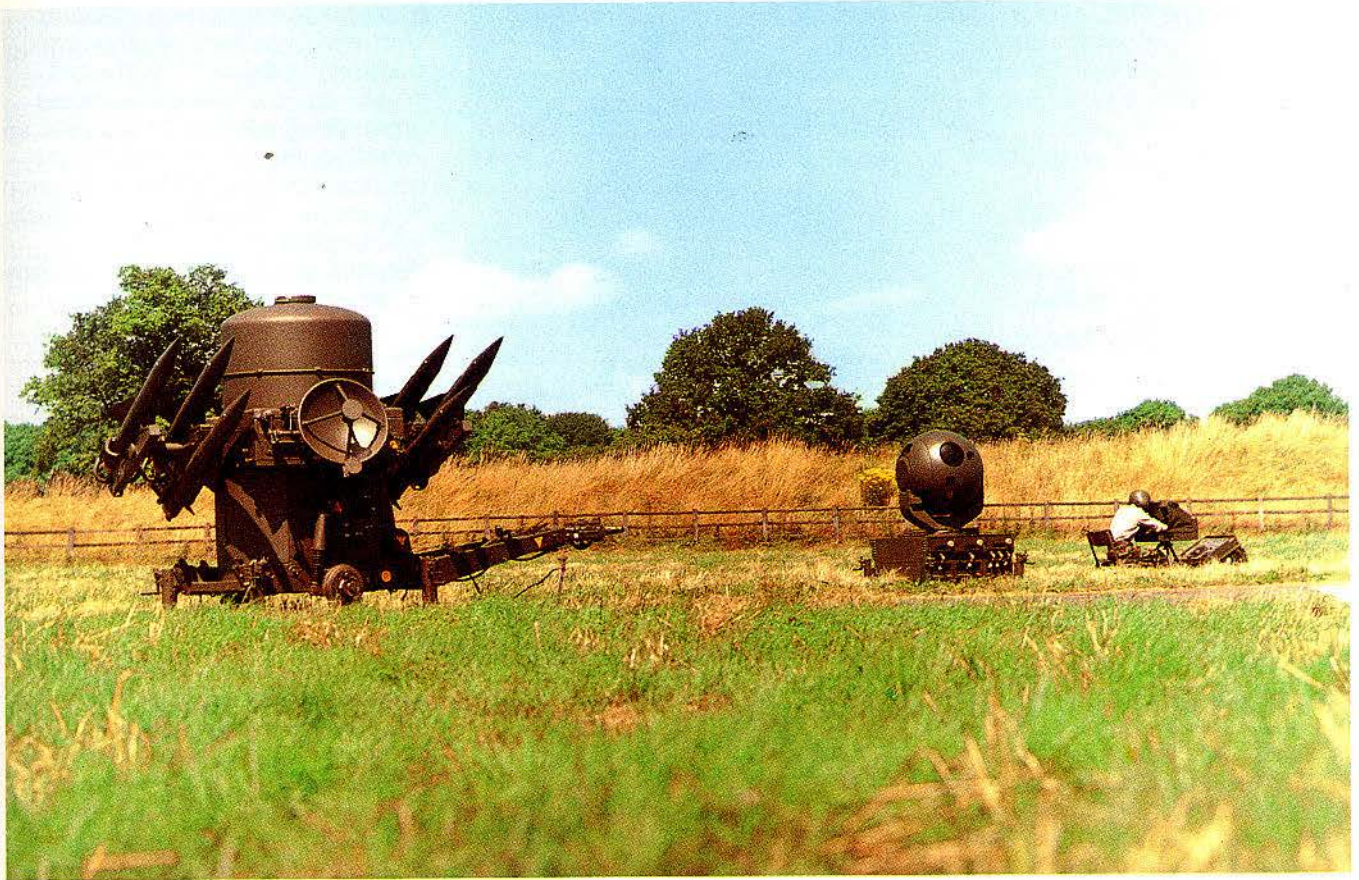
Along with the MCTL, a *Watch List* was also drawn up on emerging technologies of military interest. It does not amount to an actual embargo list, but it simply lists areas where control must be exercised to allow for prompt protective measures should the stage of development become indicative of direct strategic significance.

The 1979 *Export Administration Act* was drawn up on the basis of the Bucy Report. It expired in 1983, and renewal is being obstructed by a clash between the Senate, the President and the Defence Department, on the one hand – in favour of increasing restrictions – and the State, Treasury and Trade Departments on the other, where a less restrictive attitude prevails.

Difficulties in organizing effective controls on technology transfer constitute another aspect of the problem. The customs must, in fact, be qualified to single out protected technology products. The United States, followed at least in part by the countries of Western Europe and Japan, has been making great efforts in this direction. "Operation Exodus" has been launched in the United States, and the result is a distinct improvement in the technological level of the customs system. Obviously, without control capacity, any embargo would be merely theoretical.

At any rate, with the Reagan Administration the problem received top priority, as the President himself pointed out on several occasions during the 1981 summit in Ottawa. It has come to represent a critical point in relations between the United States and Europe since controversy broke out on the gas pipeline and the credit policy adopted by Western Europe on exports to the Soviet Union and Eastern Europe.

The problem of control of militarily significant technologies is exceedingly thorny. Definition of a strategically important product is fairly easy and clear-cut, but this is not so when we are dealing with technology. In fact, technological developments have led to the merging of civilian and military technologies. The bulk of technologies concerned are of a dual nature (*Dual Use*), application in the civilian field usually preceding military application. Moreover, restriction of technology transfer to the East has repercussions on the exchange of technologies across the Atlantic. Some have argued from this that the strategic question was only one of the targets the United States was aiming at, while the more general picture would appear to show a large-scale restoration of American economic leadership in the free world. The eventual aim of restrictions, partly recommended and in part actually imposed would, according to this theory, be not so much strategic



New version of the British "Rapier" anti-aircraft missile system, called "Darkfire". The system has 6 missiles, electro-optical tracking system and surveillance radar.

in purpose as to relaunch the competitiveness of American industry in the world markets. This is considered necessary to make up the United States balance of payments deficit and restore its economic leadership in the free world. This leadership is also seen as a prerequisite for a healthy balance of payments. Security requirements would thus be a cover to hide from some Europeans a policy amounting to technological protectionism on the part of the United States, the aim being more economic than strategic (the American share of the international technology trade had dropped from 27% in 1970 to 23.5% by 1980, while the 1984 trade balance shows a 30 billion dollars deficit with Japan, and one of 15 billion dollars with Western Europe) (19).

This theory sees American technological protection as an

aspect of the United States' neonationalism and isolationism, which also receives encouragement from European behaviour, considered excessively passive in its relations with Eastern Europe in regard to issues involving the Middle East and international terrorism. The controls have inevitably affected the freedom of exchange of scientific information and technologies. This exchange plays an extremely important role in the advance of science and accumulation of know-how, and considerable tension has arisen between the United States Administration and the Western scientific community. In fact, the problem of technology control has very delicate implications in an area where politics, economics and military affairs all meet, an area rife with potential tensions for the entire Atlantic community. Obviously, controls cannot be effective if they are not multinational and do not involve sanctions for those breaking the rules of Western solidarity. The temptations here

are great, as countries breaking the embargo could receive very considerable economic benefit. However, sanctions can only be applied by the United States, and not by the Europeans. This entails a somewhat subordinate position which could be euphemistically described as "unpleasant", but which cannot be overcome unless Europe makes a good recovery in the field of technological innovation and in the capacity to achieve rapid industrial applications.

Finally, mention must be made of the huge organization run by the Soviet Union to gather scientific and technological information from the West. It involves many Soviet institutions including: the VPK, the Premier's Committee, concerned with military industry; the GKNT, the State Committee for Science and Technology, running a complex international system; the KGB, or Committee for State Security, whose T Department employs thousands of technicians working abroad under diplomatic

protection; the GRU (Department for the Military Information Service); the Soviet Science Academy, which appears to have a staff of 20,000 systematically analyzing Western scientific and technical publications; and, finally, the Ministry for Foreign Trade, which is mainly concerned with legal operations (20). According to CIA estimates, a good 70% of militarily significant technology transfer takes place illegally on the basis of a precise plan for research and data collection covering thousands of technologies considered important (21). Only 30% of the imports are legally conducted. Moreover, 3-5% of these imports involve goods under embargo, sale having been authorized by the COCOM (22).

It has been demonstrated that all the Soviet Union's major armaments have drawn on technologies imported from the West, including: the guidance systems of the SS 18s and SS 20s; the SAM 7 derived from the "Red-eye"; the new fighter-bombers, etc. It is patently absurd for the West to make such a great contribution to the Soviet military effort, entailing for itself the need to step up its own defence expenditure to counter-balance the more dangerous threat.

Despite the initial worries and misunderstandings, the United States' allies have become increasingly aware of this fact and technology control has become less of a thorn in the flesh. Progress has been made from radical, ideological confrontation to a more reasonable, calm and pragmatic assessment of the facts.

COCOM, COORDINATION COMMITTEE FOR THE CONTROL OF WESTERN HIGH-TECH EXPORTS

COCOM is an informal organization based in United States' Embassy premises outside the centre of Paris. It draws up lists of products and critical technologies and may unanimously grant exemption

from embargo when requested by individual states.

Its aim is, therefore, to establish a collective policy. It is constituted by the NATO countries and Japan, and represents the lowest common denominator among the policies of Western states in this sector. Its decisions are also respected by such neutral Western states as Switzerland, Austria and Sweden, basically to avoid United States' extraterritorial sanctions. These sanctions would have a great effect, much sooner than is commonly supposed, on the technological level and market outlets of their industries.

The basic features of COCOM are:

- the absence of legal formalities;
- a working system based on the common consent of member states;
- specialization in the field of technology control;
- independence from any other decisional organization in the West;
- the strict reserve under which its activities are conducted.

The lack of legal formalities means that COCOM is not an institutional Forum, but simply a place for governments to meet and coordinate their policies, i.e. it is not an international organization whose decisions are binding. This is largely due to the second feature, i.e. the fact that it is based on the common consent of all member countries. It is they alone that are empowered to apply COCOM recommendations to their national export regulations and bring sanctions against industries or economic operators breaking regulations in individual states.

The unanimity of all members required for COCOM decisions represents a safeguard to prevent selective applications of embargoes to the advantage of any particular country's industries. Its specialization and independence from any other organization like NATO or the OECD derives from the particular nature of the Committee; basically, it is due to European opposition to the constitution of

a single organization dealing with every aspect of economic relations between East and West, on the understandable grounds of wishing to prevent an increase in the United States' political and economic influence in Europe. The secrecy in which the organization conducts debates and formulates decisions is an indispensable corollary for the proper functioning of the system. On the one hand, it allows for selective, flexible application of embargoes, and on the other hand helps restrain tensions among the Western countries which publicity and the involvement of public opinion would only aggravate. It also favours compromise and mediation between the various member states.

On the whole, COCOM has worked and still works effectively and satisfactorily, above all because the confrontation of radical positions between the United States and the other members has given way to more pragmatic approaches. One important factor here is that Western governments have clearly realized how irrational excessive liberalization of technological transfer would be. It would, in fact, amount to surreptitious Western financing of the Soviet military machine, especially now that the arms race takes place in qualitative rather than quantitative terms. Otherwise, the West would be behaving as Italy did in the late thirties, selling Greece great batches of arms, including 81 mm mortars, that were then used against Italian units in the second World War.

The procedures now followed for flexibility in the application of embargoes as specific exceptions can be granted (23). The overall flexibility the system thus acquires means, among other things, that differentiation is possible between the Western countries' policy towards the Soviet Union and towards the other countries of Eastern Europe.

These differentiations, especially where export of production capacity is involved, can in fact

offer a certain degree of leverage in the development, consolidation and differentiation of the economies of the countries concerned, preventing them from becoming mere satellites of the Soviet Union. With the advent of the Reagan Administration the United States has proposed improvements in work procedures and in the information base available to the Committee to speed up operations and give them greater effect. It has, even more significantly, proposed concrete control measures (national regulations, technical specialization for customs, etc.).

However, significant results can only be obtained with tighter controls applied by individual states in Europe and a more determined effort to restrain the illegal transfer of technologies, scientific discoveries and project and production capacity, or, at least, to make it more hazardous and costly.

CONCLUSIONS

Economic cooperation with the East is one of the areas where the United States and Europe confront one another, risking tensions and crises in the Atlantic Alliance which could, in fact, have far more serious negative effects than the actual economic (for Europe) and strategic (for Western security) impact of the problem. It involves, after all, 2-5% of the OECD countries' trade. It is clearly irresponsible to contribute to strengthening Soviet military power for immediate economic advantages in limited sectors, incurring further defence expenditure that not only counterbalances the economic advantages but places a considerable burden on the Western tax-payer. Policy in this sector must be formulated regardless of ideological attitudes and principles or the pressures that various economic lobbies exert to varying degrees on Western governments.

A more pragmatic attitude is therefore called for, devoid of indulgence, rhetoric and



Anti-aircraft "Aspide" missile launched by the "Albatros" naval system.

illusions, capable of enforcing controls but limiting them to the minimum strategically necessary.

Western governments must obviously ensure that trade with the East does not increase the Soviet military threat to the West, and the impact trade can have on this threat is therefore the first point to be clarified. The attempt made by the United States to assess this impact quantitatively and qualitatively represents an extremely useful basis to begin an examination of the problem (24).

The truly critical point is technology transfer, and all efforts must therefore focus on this, pinpointing the targets to aim at by means of thorough "Net Technological Assessments". This is the only way to have a clear idea of where embargoes are to be placed, not only to avoid the dispersion of energy and resources but also to eliminate the two incidental effects that could hit back at European security. Firstly, large-scale, intensive interference would have the final result of confrontation and tensions, not only between the United States and the countries of Europe, but also within each of the Western countries. Secondly, it is necessary to avoid excessively severe controls, which could amount to a limitation of the

circulation of ideas and scientific and technological information in the West, as well as involving a US block on licences granted by American companies and research centres to European industries.

This too would place very serious problems in the way of western solidarity and eventually arouse a lot of very strong feeling.

But the basic point remains that of stepping up technological development and above all achieving prompter industrial utilization of innovations. This will entail a real change in mentality and the criteria according to which the nations' wealth is handled. In Western Europe this wealth is all too often squandered on mere relief operations aiming not so much at obtaining the electors' assent as their acquiescence or even complicity.

American pressure in this sector is perfectly legitimate, especially when trade with the East involves technologies coming more or less directly from the United States. The chances of achieving greater capacity to resist these pressures are in direct proportion to the developments Europe, or rather

the countries of Europe, succeed in making in their own technological capacity with their own efforts, without expecting to avoid effort through US aid. The crude facts of political life have to be faced. In international relations, despite all the various legal and diplomatic issues, what Thucydides bluntly pointed out in his commentaries on the Peloponnesian war still holds today: "right is a question of the will of the strongest: in fact, the powerful do as they wish, while the weak get their deserts, since if they are weak they have in one way or another contributed to being so". It is futile to rely on others to make up for one's own shortcomings, if only because sooner or later their help must be paid for at a surprisingly high cost.

Carlo Jean

NOTES

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(8) D. Buchan: "Western Security and Economic Strategy toward the East", IISS, Adelphi Papers no. 192, London, 1984.

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(15) Statement made in the course of a lecture given by Defence Secretary Weinberger to the Foreign Policy Association of New York on 21st May

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EAST - WEST

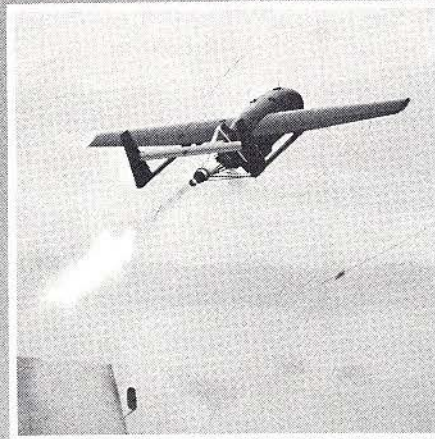
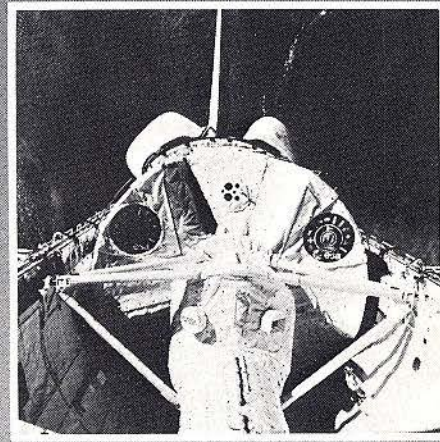
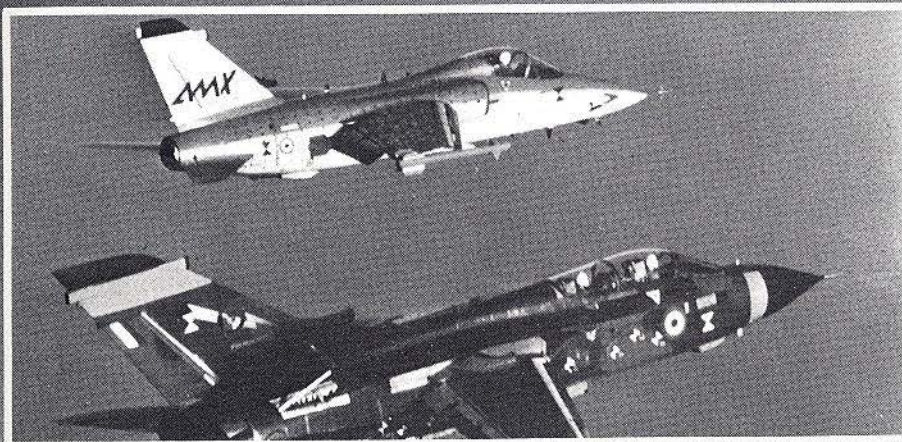
ECONOMIC

RELATIONS AND PROBLEMS

IN THE TRANSFER OF CRITICAL

TECHNOLOGIES

LOOKING FORWARD.



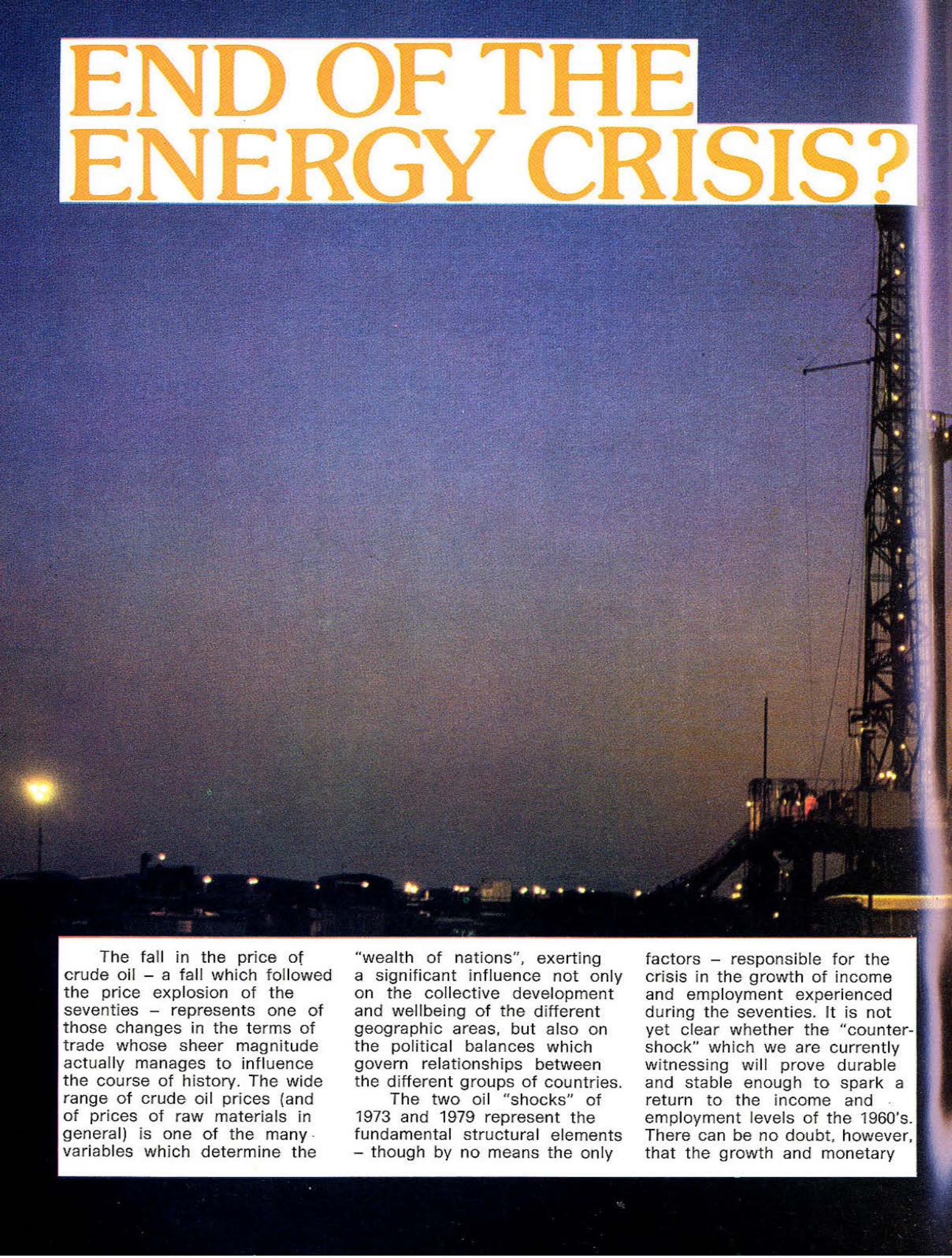
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END OF THE ENERGY CRISIS?



The fall in the price of crude oil – a fall which followed the price explosion of the seventies – represents one of those changes in the terms of trade whose sheer magnitude actually manages to influence the course of history. The wide range of crude oil prices (and of prices of raw materials in general) is one of the many variables which determine the

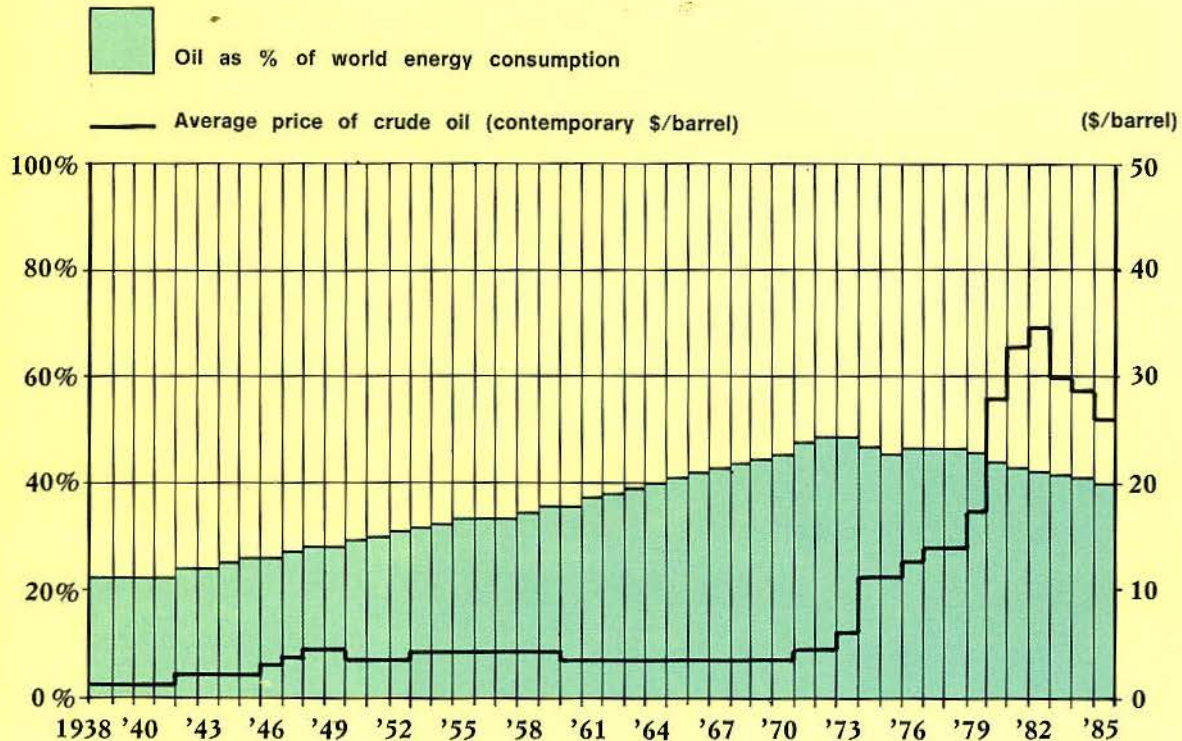
“wealth of nations”, exerting a significant influence not only on the collective development and wellbeing of the different geographic areas, but also on the political balances which govern relationships between the different groups of countries.

The two oil “shocks” of 1973 and 1979 represent the fundamental structural elements – though by no means the only

factors – responsible for the crisis in the growth of income and employment experienced during the seventies. It is not yet clear whether the “counter-shock” which we are currently witnessing will prove durable and stable enough to spark a return to the income and employment levels of the 1960’s. There can be no doubt, however, that the growth and monetary

OIL AS % OF WORLD ENERGY CONSUMPTION AND THE PRICE OF OIL

Graph 1



Source: ENI calculations using data from BP statistical review, U.N. World Energy Supply.

stability of the industrialized nations (as well as other areas of the world) are critically affected not only by this phenomenon, but also by our ability to appreciate it and to meet it through the formulation of adequate economic policies.

With this in mind, I will do my best to offer an overall picture of the current situation on the oil markets, together with a review of the related short, medium and long-term economic consequences, identifying just what it is we are able to understand and describing exactly the analytical instruments we must use.

Besides its relevance in terms of the real world, the issue of crude oil prices also represents a formidable theoretical challenge for anyone seeking to explain the real-life situation analytically. In addition it provides economists with a theoretical and empirical measure of their

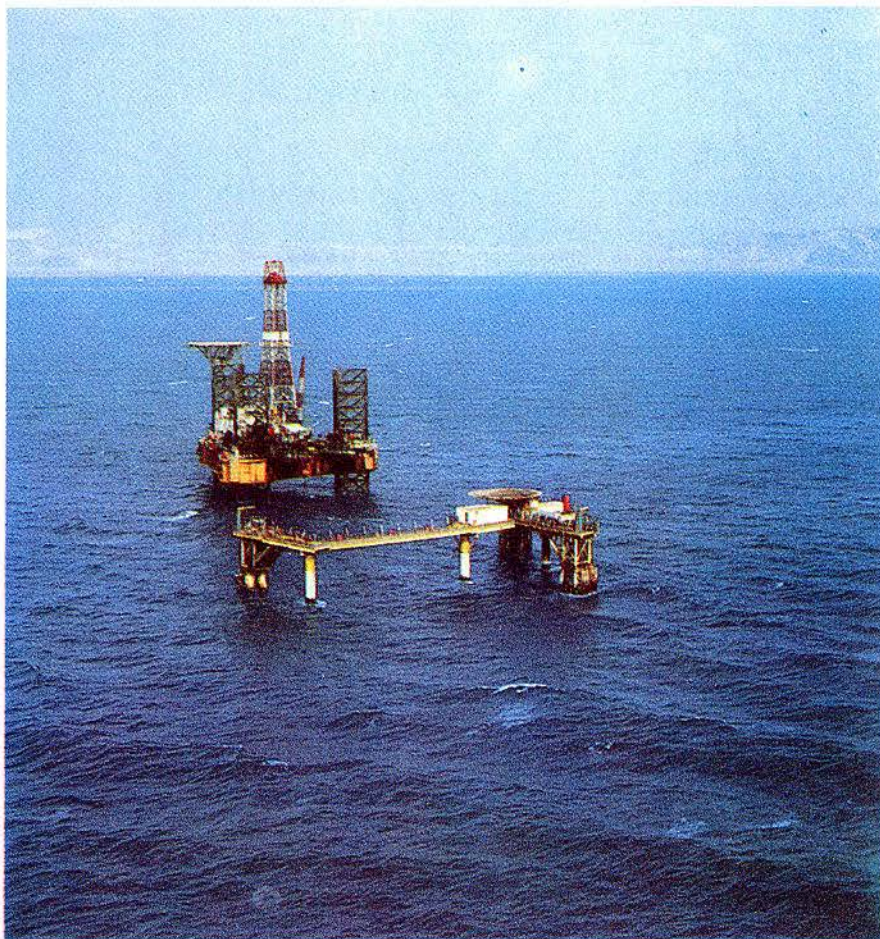
own inability to explain the events in question.

The oil market is far removed from the cases dealt with in microeconomics textbooks. Indeed, it is closer to recent developments in the study of oligopoly. The oil market is an imperfect market in which various economic agents are busy promoting a wide array of interests. The various agents interact with each other and, when the time comes to make decisions, they are also influenced by the outside world. In this field, analytical instruments such as game theory prove extremely helpful (in particular, hierarchical games involving threats as well as both cooperative and non-cooperative solutions). Clearly, however, they are not able to investigate certain aspects of the phenomenon. In any case, the task ahead of us will certainly put our skills of comprehension to the test.

THE CRUDE OIL MARKET

To understand the oil markets, it is best to begin with a brief historical analysis. Oil has not always enjoyed widespread use as an energy source. At the end of the Second World War, it accounted for little more than 25% of total world energy use (graph 1). The beginning of its growth dates from this period. Oil's share of energy consumption continued to grow up through 1973, at which point it reached 50% of the total. With the onset of the energy crisis, however, this percentage began to decline. Comparing the price trend to the percentage share, we see that the replacement of oil with other energy sources begins in 1973, immediately following the first *shock*, and becomes decidedly more pronounced in the wake of the second, 1979 *shock*.

Between 1973 and 1985, the decline in energy and oil



A production and drilling platform in the Gulf of Suez.

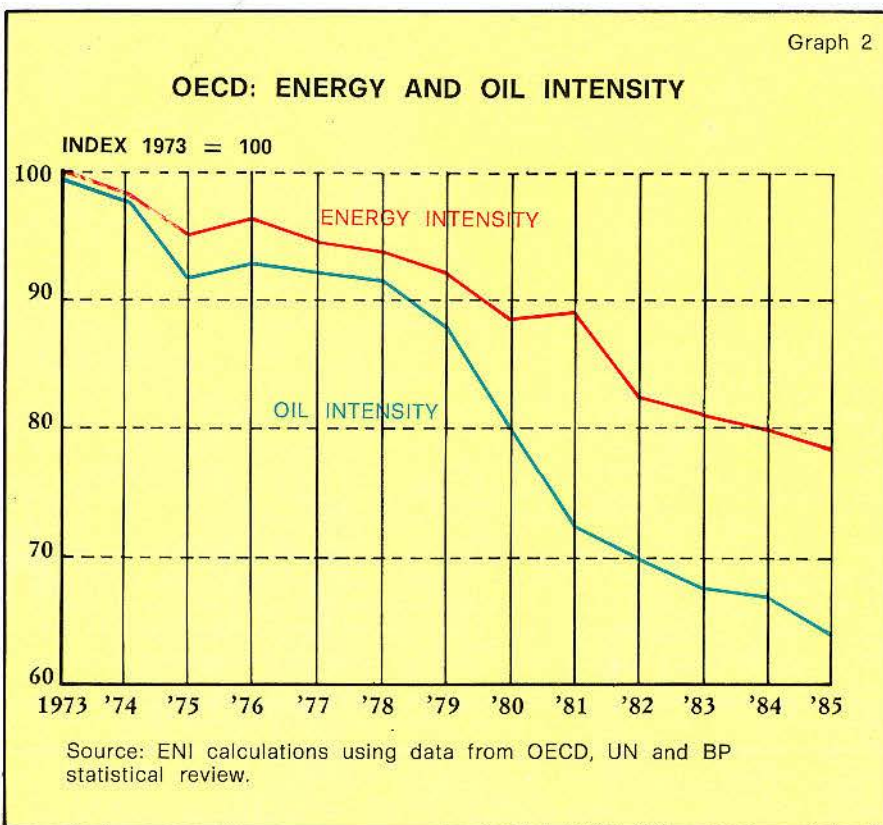
use in the industrialized nations of the OECD (graph 2) reduced the consumption of crude oil by 20%, from approximately 50 million to roughly 40 million barrels a day. As I mentioned earlier, the drop was relatively greater after the second oil *shock*; what is more, it was absorbed in its entirety by the OPEC countries, which lowered their production from 30 million to 17 million barrels a day between 1973 and 1985, reducing their percentage of the total from 65% to 40% (tables 1 and 2).

Within this overall picture, the principal "buffer" was Saudi Arabia, which has more than halved its production in terms of 1981 levels and now operates at around 40% of its production capacity, as compared to levels of 60% and 80% in the other countries.

At the same time, we have witnessed a strong growth rate (in absolute as well as relative terms) for North Sea oil – a source which did not even exist in 1973 – and other non-OPEC producers. As far as the United States is concerned, it has raised its percentage of total production by simply keeping its levels unchanged. For that matter, the United States is a case apart, being both the world's largest producer of oil (10 million b/d) and the largest importer (5 million b/d).

At the end of January of last year, the price of crude oil registered a significant fluctuation, bringing the price in real dollars to levels slightly below those which prevailed immediately following the *shock* of 1973 (graph 3). Indeed, in real terms the current prices are actually lower than the average quotation for 1973.

The drop in price has been caused by surplus demand, the result of a sharp increase in Saudi Arabia's level of production, which has gone from an average of 3 million b/d in 1985 to 4 million b/d during the



first quarter of last year. The current production figure was not arrived at by chance. It represents the ceiling assigned to Saudi Arabia by OPEC some time ago. To assure that it can sell the desired quantity of oil, Saudi Arabia has introduced the *net-back* contract, a new type of arrangement which sets the price of crude oil according to the ultimate value of the refined products generated from that oil so as to guarantee that the buyer makes back the cost of processing the oil (graph 4). This form of contract has slowly replaced fixed-price spot purchases, which have fallen from 40-50% of the market to 4-5% and are limited, for the most part, to North Sea oil and a few shipments of American crude.

According to the experts, two principal objectives lie behind Saudi Arabia's decision to follow this pricing policy:

- force a limited number of marginal producers out of the market while checking the tendency to replace oil with other energy sources, a phenomenon which became extremely wide-

WORLD OIL PRODUCTION (1) (2) (Millions of barrels for day)							Table 1
	NON OPEC			OPEC		TOTAL	(3) PRICES (\$/barrel)
	USA	North Sea	Others	Saudi Arabia	Others		
1970	11,3	—	5,2	3,6	20,0	40,1	1,7
1973	10,9	—	6,3	7,3	23,7	48,2	5,0
1979	10,1	2,0	7,8	9,6	21,9	51,4	24,0
1981	10,2	2,3	8,7	10,0	13,4	44,6	34,2
1985	10,5	3,5	11,4	3,2	13,9	42,5	26,5
(1) Countries with planned economies not included. (2) NGL's included. (3) Average prices of OPEC crude on the market. Source: ENI calculations using BP Statistical Review data and Platt's Oilgram.							

WORLD PRODUCTION OF OIL IN THE FIRST MONTHS OF 1986 (1) (2) (Millions of b/day and percentage shares)							Table 2
	USA	NON OPEC		OPEC		TOTAL	(3) PRICES (\$/barrel)
		North Sea	Others	Saudi Arabia	Others		
January	10,5 (23,8%)	3,8 (8,6%)	11,4 (25,8%)	4,3 (9,7%)	14,2 (32,1%)	44,2 (100,0%)	22,5
February	10,5 (23,9%)	3,8 (8,6%)	10,9 (24,8%)	4,6 (10,4%)	14,2 (32,3%)	44,0 (100,0%)	19,0
(1) Countries with planned economies not included. (2) NGL's included. (3) Average prices of OPEC crude on the market. Source: ENI calculations using Petroleum Intelligence Weekly data and Platt's Oilgram.							

Units of the Saipem company docked at the Sharjah base prepare for the voyage to Saudi Arabia, where they will lay a number of sea lines.



Obviously, all producers lose income with prices at the current levels (and even more so at lower levels), a fact that should add to the incentives for once again forming some type of global agreement: the course advocated by Saudi Arabia.

The question of whether or not such an agreement can be reached is no small matter, given that its outcome will determine the temporary or structural nature – for a number of years – of the decline in oil prices. Further uncertainty is generated by the fact that not only economic phenomena, but also political decisions and relationships on a world-wide level, can have a decisive effect on the issue. The eventual response, no matter how much factual support it may enjoy, will still present a rather high element of risk.

The situation which has prevailed around the oil markets since the beginning of last year can be described in theory as a "hierarchical game for $\times$ number of people". The adoption of this theoretical framework makes it possible to consider whatever information has been gathered through the more traditional criteria of balance and imbalance, all the while allowing for the possibility that cooperative or non-cooperative forms of behavior on the part of the principal economic agents may lead to at least a locally stable price, as opposed to the *market clearing* level, or the price at which the various levels of supply and demand desired by all the agents have balanced out.

The principal "players" in the chosen framework are:

- the rich OPEC countries with considerable unused production capacity (Saudi Arabia, Kuwait and the United Arab Emirates);
- the "poor" OPEC and non-OPEC countries which have little unused production capacity

spread after the second oil shock (it should be remembered that, at the time, Saudi Arabia was opposed to the price increases);

- persuade both the OPEC and the non-OPEC countries to cooperate in a unified policy of production control.

At the present moment, despite the low price of crude oil, estimates put the available surplus on the world-wide oil market at approximately 5-5.5 million barrels a day, amounting to roughly 10% of the total demand (including that generated by countries with planned economies), which is estimated to be around 55 million barrels a day. In reality, the potential surplus of supply over demand is much higher (up to 10-12 million barrels a day for OPEC) if one takes into account the theoretical top levels of production, that is to say the levels which would be reached by the Gulf States, and Saudi Arabia in particular, if they could produce "at will". Today,

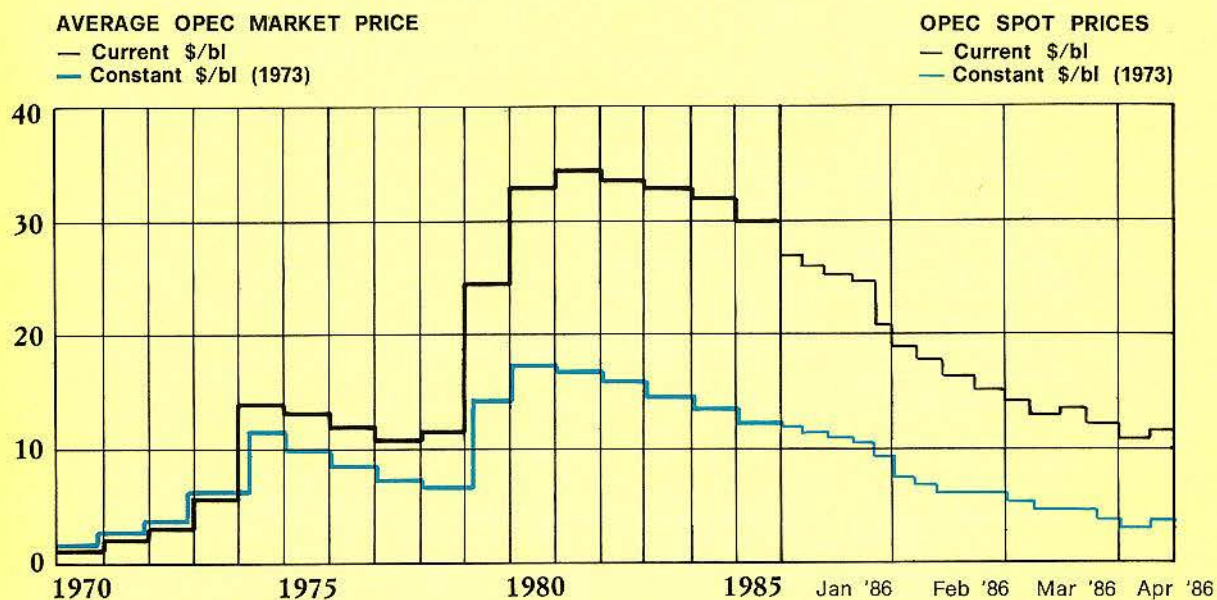
however, this scenario is rejected out of hand.

The surplus of supply over demand caused by Saudi Arabian production levels is thus the root cause of the fall in prices. And this fall has yet to bottom out, given that the current prices (around \$ 12-13) still produce a surplus. As a result of the Saudis' decision to maintain current production levels, the prices are destined to drop even further, until the market once again reaches a point of stability, a function of two complementary factors:

- a slackening of supply resulting from the failure of certain marginal, cost-intensive producers;
- increased demand caused by the rise in consumption which results from accelerated economic growth, decreased energy savings and, above all, the increased replacement of coal with hydrocarbons, a trend which takes on massive dimensions just below the present price levels.

CHANGES IN THE PRICE OF MARKETING OPEC * CRUDE IN CURRENT AND CONSTANT DOLLARS

Graph 3



Source: ENI calculations on OECD data and PLATT's Oilgram.

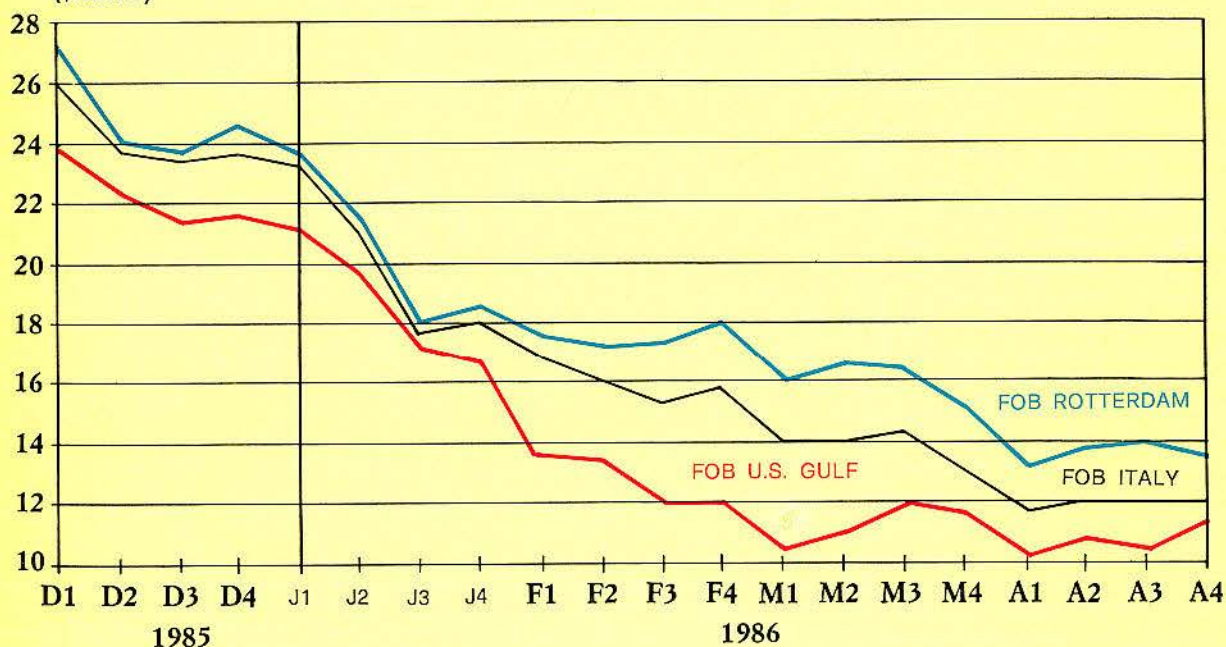
* Calculated average between OSP and spot prices.

WEEKLY CHANGES IN NET-BACKS

Graph 4

(cycle T+R+C at full cost)

(\$/barrel)



Source: ENI calculations using data from Platt's Oilgram.

(other OPEC countries and Mexico);

- industrialized non-OPEC producers (Great Britain, Norway);
- the oil companies (divided into large and small concerns).

Each of these parties has a different set of interests, and thus a different operational goal. The oil companies naturally maximize profits. The OPEC countries and the non-OPEC "poor" nations seek to maximize their gross revenues in order to finance their development. The rich Arab countries are interested in staying as close as possible to price and production targets, levels which have been chosen with an eye to maintaining an optimum flow of resources extracted while limiting, or even reversing, the replacement of crude oil with other fuels (it should be remembered that Saudi Arabia was opposed to the second *shock*).

It is good to keep in mind that up until the end of last year, the "game" had an implicitly cooperative solution, as long, that is, as Saudi Arabia agreed to make up for the "defections" of the other producers. The rich OPEC countries, and especially Saudi Arabia, have acted as *swing producers*, adjusting the overall quantities of oil produced in order to keep the price at the level decided upon by OPEC. Under such a system, however, the fact that the non-OPEC producers (both countries and companies) have taken on the role of *free riders* – refusing, in other words, to limit their production, and, indeed, gradually increasing it at the expense of the swing producers and, in more general terms, OPEC – reduces OPEC revenues considerably. Between 1980 and today, these revenues have fallen by more than 50% in face value, descending to 1973 levels in terms of real dollars (graph 5).

The balanced situation of the past, in which Saudi Arabia compensated for the behavior of the other producers, has been broken, and we find ourselves in a fluid phase, in part because the non-OPEC producers, and

especially those in America and the North Sea, refuse to negotiate new production levels with OPEC.

As is rather widely known, the first result of a like theoretical framework is the existence of multiple balances. Some can turn out to be cooperative (the result of explicit and implicit agreements between the players), others non-cooperative.

Naturally, the existence of multiple balances per se does not mean that "anything goes". Indeed, the sum total of possible solutions is limited, and the range of potential results can be assigned a likelihood according to the consequences of a given solution for the different players.

The absolute limits, which, in a certain sense, also represent objective boundaries, are (graph 6):

- *upper*, the price at which crude oil is replaced on a massive scale by other sources of energy (leading analysts hypothesize a level slightly above 25 dollars a barrel);
- *lower*, the limit represented by the marginal cost of extracting the oil; for quantities of more than 50 million barrels a day, the experts place this level at roughly 5 dollars, or even less.

For all intents and purposes, the marginal cost is the physical floor, representing the bottom limit for any non-cooperative solution. But there are other thresholds in the higher price range which have a good chance of checking the price drop.

Analysts place the most important boundary at around \$ 11-13 a barrel. With crude oil at this price, a large number of small producers are excluded from the market, and a significant amount of coal is eliminated, allowing for a healthy increase in both demand and production within a time period which is reasonable, though not brief. There is disagreement over the exact dimensions of this increase, but the most widely respected opinions, as well as the calculations we ourselves have made with the oil-market

econometrics model developed in cooperation with the OAPEC (the Interdependence model), point to two years as the amount of time needed to clear the market of its current surplus. The number of years becomes 4 if the price settles at a level of about \$ 16-18.

A drop to current price levels does not exclude any *primary producer* from the market (especially in the short run), but it does have a dramatic effect on the revenues of all the producers, including those in America and the North Sea.

In any case, an eventual production rise caused by the replacement of other energy sources, chief among them coal, would never reach the dimensions needed to compensate for the price fall and maintain gross revenues unchanged. For reasons of production capacity, the chief beneficiaries of such a rise would be the "rich" OPEC countries, who have suffered the largest production drops on account of their role as *swing producers*.

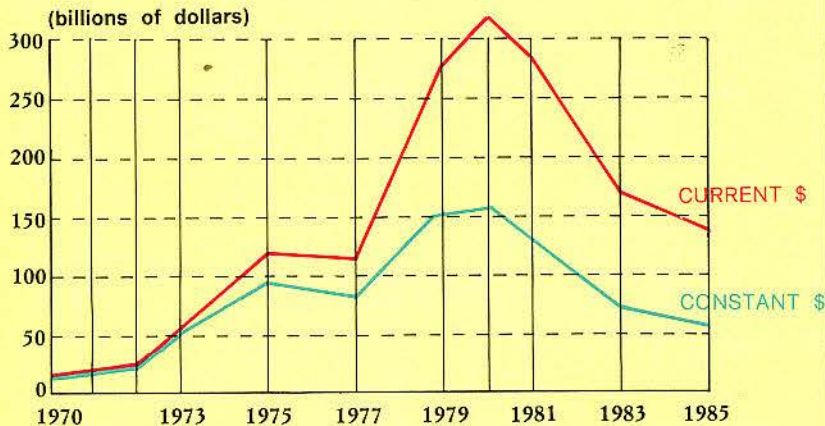
For the majority of the producing countries, then, a resurgence of revenues is impossible in the absence of controls which limit the overall supply to a level where the price of crude oil begins to rise. But according to the countries who triggered the fall in prices, any production controls must be accompanied by a complete renegotiation of the various quotas: the famous *fair share* requested by OPEC.

When one considers the losses that would befall all producers during a price war, together with the not entirely unreasonable accumulation resulting from the redistribution of the quotas requested by OPEC (and Saudi Arabia), then it seems obvious that the game must once again become a cooperative event, and quickly, given that all the producers stand to gain from a decrease in production levels which raises prices.

At present, however, implementation of this solution seems

OPEC INCOME IN CURRENT AND CONSTANT DOLLARS (1973)

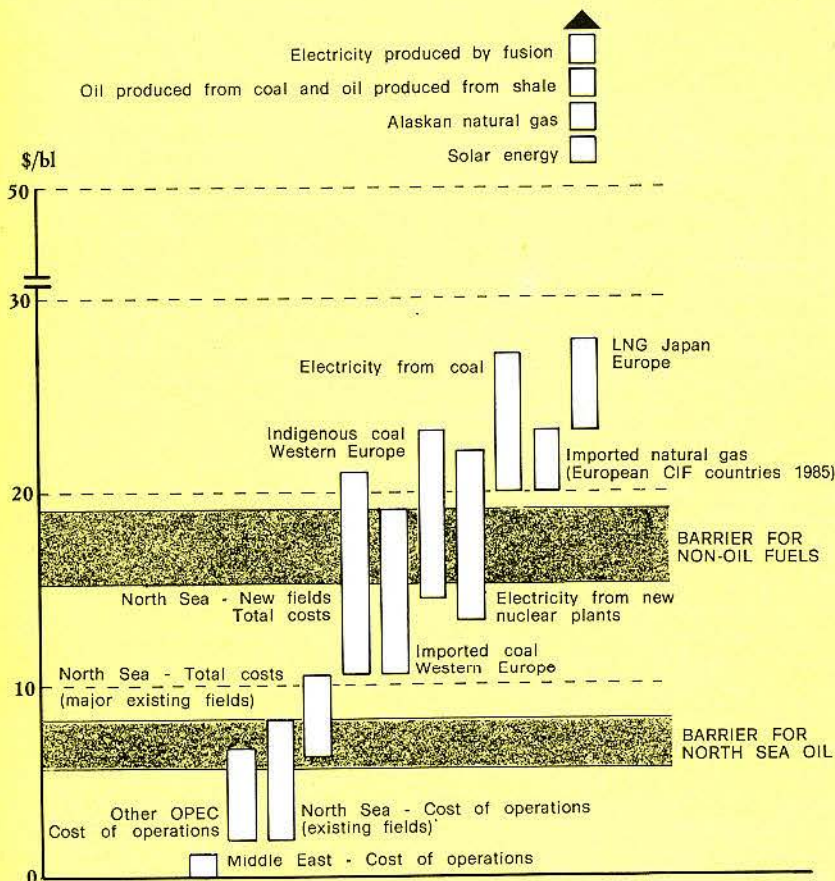
Graph 5



Source: ENI calculations using OECD data and PLATT's Oilgram.

SUBSTITUTIONS AMONG DIFFERENT ENERGY SOURCES (cost in \$/bl or \$/bl equivalent)

Graph 6



Source: Cambridge Energy Research Associates; OECD; Shell; PIW.

highly improbable, due in part to the wide variety of interests underlying the actions of the different producers, countries and corporations. Though the producers should theoretically be in favor of an accord, they nonetheless have considerable incentive to play the *free rider* role by defecting from the cooperative balance at the first possible occasion. In abstract terms, one has a classic case of the so-called *prisoner's dilemma* in which the first defector benefits at the expense of those who cooperate by selling his oil at a price kept high by the others.

But apart from theoretical considerations, we should perhaps listen to what the large American companies have to say, given that they may possess a better "feel" for the situation than our fellow economists. At one end of the spectrum, we have Mr. Garvin, President and Chief Executive Officer of EXXON, who forecasts prices of no more than \$ 12 during the next couple of years. And Mr. Garvin is not joking: on the strength of that prediction he has halted all plans for exploration and laid off 40,000 employees out of a total of 140,000.

The major European companies, including Shell, have taken positions at the other extreme, holding that despite a further, short-term drop in crude oil prices (a function of the disappointing OPEC meeting, the end of the strike in Norway and Soviet exportations, which, as expected, have once again begun to flow out of the USSR), the levels will begin to rise by summertime, reaching \$ 18/b by the end of the year, at which point they will remain essentially stable. At present, this is the reigning hypothesis, being backed by a projected rise in demand and a fall in the non-OPEC supply of crude.

Neither prediction takes for granted a new agreement signed by the producing countries, an eventuality which could obviously stabilize prices in a much shorter period of time and at a level determined by the supply.



A striking view of the "Saipem Due" as it performs a drilling operation.

Two years of price stability at a level of roughly 12 dollars per barrel would have a very negative effect on the cash-flow of the oil companies and, as a natural consequence, on the level of funds invested in the research and development of petroleum deposits. According to a number of analysts, these investments could fall by more than 50% from their estimated 1985 level of 100 billion dollars. A like development would have grave repercussions on the energy vulnerability of the industrialized countries. Their dependence on Saudi Arabia and the Gulf Nations would grow to a tremendous degree, producing a complementary rise in the risk represented by the revival of a sellers' market. What is more, the elimination of the oil-related service industries would destroy a crucial, technologically-advanced field of endeavor, one whose reconstruction would

prove very difficult and costly.

In my opinion, the industrialized countries, and chief among them, the United States, will not easily accept this prospect. Indeed, the scenario will eventually lead to changes in the current laissez-faire oil policy, spawning policies aimed at making the game of the oil-producing nations a more cooperative affair in the interests of stabilizing the price at a level – as mentioned earlier, 16-18 dollars – which allows for both economic revival and a decline in the inflation rate, but without compromising the dearly-won autonomy and relative energy independence.

THE REPERCUSSIONS ON THE PRINCIPAL GROUPS OF COUNTRIES

Compared to the conditions which prevailed at the beginning of this years, the prospect of low crude oil prices will have a significant effect on the various groups of nations which make

up the world economy, in part as a result of the dollar's gradual devaluation.

All other conditions being equal, the oil-producing nations as a whole lose 10 billion dollars (slightly less than 5 million in the OPEC countries alone) for every one-dollar decrease in the price of crude oil, a mechanism which has a serious effect on the ability of these countries to import goods and services. A drop of \$ 11 per barrel in the price of crude oil (from an average of \$ 27 in 1985 to \$ 16 *last year*) represents a \$ 110 billion decrease in the flow of wealth from the first-world countries to the oil-producing nations, with the principal benefits going to the industrialized nations (82% of the petroleum sold is bought within the OECD area). Among the oil-producing nations, the hardest hit in absolute terms are Venezuela, Mexico, Nigeria, Algeria and Indonesia.

The most significant percentage reductions in GNP, however, have been registered in certain small countries, such as Egypt and Algeria, and, in general, in the moderate Mediterranean countries whose industrial structures are just beginning to develop.

The consequences for the Soviet Union are very serious, given that petroleum and gas exports to Western nations represent roughly 60% of her hard-currency earnings and 84% of her exports. In the short run, however, the Soviets' huge gold reserves will compensate for the missing currency.

In the case of the United Kingdom – despite the reassuring words of the British authorities – the situation is equally gloomy. Crude oil production represents 4% of the GNP and accounts for 9% of all tax revenues. Oil exports make up 7% of all exports, and thus a fall in the price of oil naturally results in a net deterioration of the principal macro-economic variables.

The only oil-producing countries able to withstand a decrease in the price of oil for

an extended period of time are the rich OPEC nations.

Saudi Arabia, in particular, has sharply increased its production levels (from 3 million barrels per day to 4.5 million), thus managing to limit the overall drop in income, despite the effect of fluctuating prices. This further explains how the Saudis succeed in playing what appears to be a leading role in the maintenance of the current situation.

As far as the US is concerned, there is no denying the sizeable amount of damage inflicted on the domestic oil industry. On the whole, however, the macro-economic benefits exceed the costs. For that matter, the Reagan administration, despite problems of competitiveness, does not seem ready to impose protective tariffs (as has been done on other occasions).

In the industrialized countries which do not produce oil, the prospect of low petroleum prices is viewed with great satisfaction. In the absence of a rigid price floor for consumption, the principal forecasts all point to an increase in gross national product and employment levels as well as the likelihood of a drop in interest rates and inflation compared to the reference scenario (which was based on oil prices of \$ 26-27). Trade figures are also showing signs of improvement. Only two industrial countries have seen their balance of payments take a turn for the worse (the United Kingdom and Norway). Naturally, the effect varies from country to country. Italy in particular – where the economy is twice as oil-intensive as the EEC average – seems to benefit in comparison to her European partners. In the absence of any further political or economic manoeuvring, and assuming that the dollar stays at its current level of exchange, the available estimates show that an oil price of \$ 15 a barrel would result in a 2.6-2.8% growth in the GNP, and this despite the decline in exports to the OPEC countries.

According to the same forecasts, inflation should fall below 6%, while trade figures will improve by a total of roughly 3 billion dollars.

Naturally, the macro-economic effects will be determined by the political and economic policies of the individual countries as well as the coordination of these different policies. A manoeuvre which has one meaning in Italy could produce a very different effect – due to a renewed growth in the supply – following changes in the policies of the country's European partners or the United States. Similar considerations hold true for every industrialized country.

The effect on non-OPEC developing countries is equally pronounced. Generally in debt, these countries would seem to benefit in a particularly marked way from the expected drop in interest rates, a development which should relieve some of the pressure on their balance of payments. Looking at the forecasts available for these nations as a group, we see a growth in the GNP (an average of 1%) as well as a significant increase in reserves, but the most important element, from our point of view, is the substantial rise in the ability of these nations to import goods, a figure as high as 20% for the major Latin American and Asia countries. In relative terms, Brazil – second only to Mexico in the size of her debt – should benefit most from these developments.

CONCLUSION

Estimates for the decidedly positive effect of energy savings on the economies of the industrialized nations are produced, for the most part, by simulating models based on econometrics. As a result, the exercises involved, though highly sophisticated, are mechanical in nature, being chiefly concerned with the wide range of variations on the exogenous variables. What is more, the majority of these models are formulated

“by country”, without taking into account the repercussions for foreign trade relations between the different geographical areas.

Furthermore, the models ignore factors which, in my opinion, will play a fundamental role in the macro-economic evolution of the months to come. On the one hand, these include instances of financial fragility and effects on liquidity; on the other, they involve repercussions of a political nature. Within this last area, one should not lose sight of the scenario in which Saudi Arabia is “politically” persuaded to return to its role a residual producer. Given the magnitude of the drop in net income suffered by the oil-producing countries, it is not unreasonable to predict a period of heightened political instability in the Mediterranean area (indeed, we have already received indications of a like development). The fact is that no country will prove eager to return to its pre-1973 standards of living, not after having enjoyed much higher levels of well being.

Before the oil *counter-shock*, the rich oil-producing countries found various ways to maintain the standard of living of the poorer, non-oil-producing nations. However unstable it might have been, the resulting balance was laboriously preserved by subsidies and transfers of wealth from the “rich relatives”. This aid became a fundamental element of consensus, amounting to a sort of *welfare state* among states. The drop in oil income now makes it necessary to reduce the transfer of funds between rich countries and poor ones, a trend which will prove unsettling for the political stability not only of the moderate, friendly countries, but of the radical, potentially hostile nations as well.

In both history and economics, the presence of theoretical models does not erase the need to take the unexpected into account: in other words, chain reactions which might modify the framework for our forecasts.



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A chain of events – which by its very nature, proves difficult to anticipate – could produce oil-industry scenarios that differ from those we have identified in the present effort. In these scenarios, the revival of the *pre-1986* sellers' market will take place long before the date predicted by economists.

I offer one final observation. The events witnessed at the beginning of 1986 seem to represent the "revenge of the marketplace". The dissolution of the agreement between the oil-producing countries has led to a drop in the price of crude oil, a development whose effect on income and employment levels has been decidedly positive.

This, however, is only the first half of the story. Oil is a scarce resource whose distribution among the various countries of the world is extremely uneven (suffice it to say that Saudi Arabia alone holds 65% of the world's known reserves, and the cost of extraction in the area is much lower than elsewhere). The depressed prices now in effect will bring petroleum's share of the world's total energy sources back to 45-50%, and within a few years, most of that oil will once again be coming from the Gulf States. If a "free"

market is allowed to operate, without any corrective measures on the part of the consuming countries, then the situation will once again return to a near-monopoly, making it a simple matter for the producers to launch another price *shock*. Faced with this *shock*, neither the European producers nor the US will be capable of instantly, or even rapidly, entering the market to calm the waters, given that the sums spent on research and exploration outside of the Gulf have been steadily declining; indeed, should the price stay at its current level of 12 dollars, these sums will undergo a veritable collapse.

A market free of energy-policy interventions on the part of the consuming countries would lead to extremely wide oscillations in the market forces and prices. More than the given price level, it is this *variation* in the price which generates chaos in the systems of production.

I would like to conclude with a general observation. When politicians or the press discuss this subject, their words are often saturated with an acritical, nearly blind faith in the benefits of a free market.

In all likelihood, this is a fitting reaction to the excessive faith placed in interventionist economic policies in years past. But in a less than perfect world – a world which contains

non-competitive markets and suffers from uncertainty over the future – the free market system can give birth to "monsters". Policies meant to maximize profits in oligopolistic markets whose producers maintain interdependent relationships can lead to price fluctuations which will produce destructive side-effects in certain industries while disrupting entire economic areas. In many cases, the higher the profit, the further the distance from an ideal situation and the greater the damage to consumers. My point is drawn from firmly established, self-evident doctrines of economic theory, and yet it is often overlooked in current discussions of the subject.

The economic and political advantages of the present *laissez-faire* policy stand in direct contrast to the future economic and political costs of increased vulnerability. With the price of crude oil at less than 15 dollars a barrel, dependence on OPEC is just around the corner.

Franco Reviglio

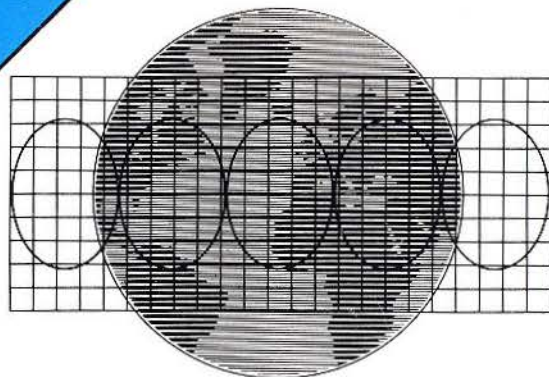


Professor Franco Reviglio graduated from the University of Turin in 1959 with a law degree. He was named a full professor of Economic Science and Financial Law in 1974, going on from for Economic Science at the Faculty of Economy and Trade of the University of Turin.

Having previously served as an economist in the International Monetary Fund's Public Finance Department, he worked between 1971-1973 for the Institute of Studies on Economic Planning (ISPE), carrying out studies on tax reform and its implementation.

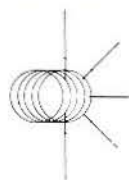
From August 1979 to June 1981, he served as Minister of Finance. In 1983, he was named to the presidency of the ENI corporation; in the same year he became a director on the ASSONIME board, and in 1984 he became a member of the ASPEN INSTITUTE ITALIA.

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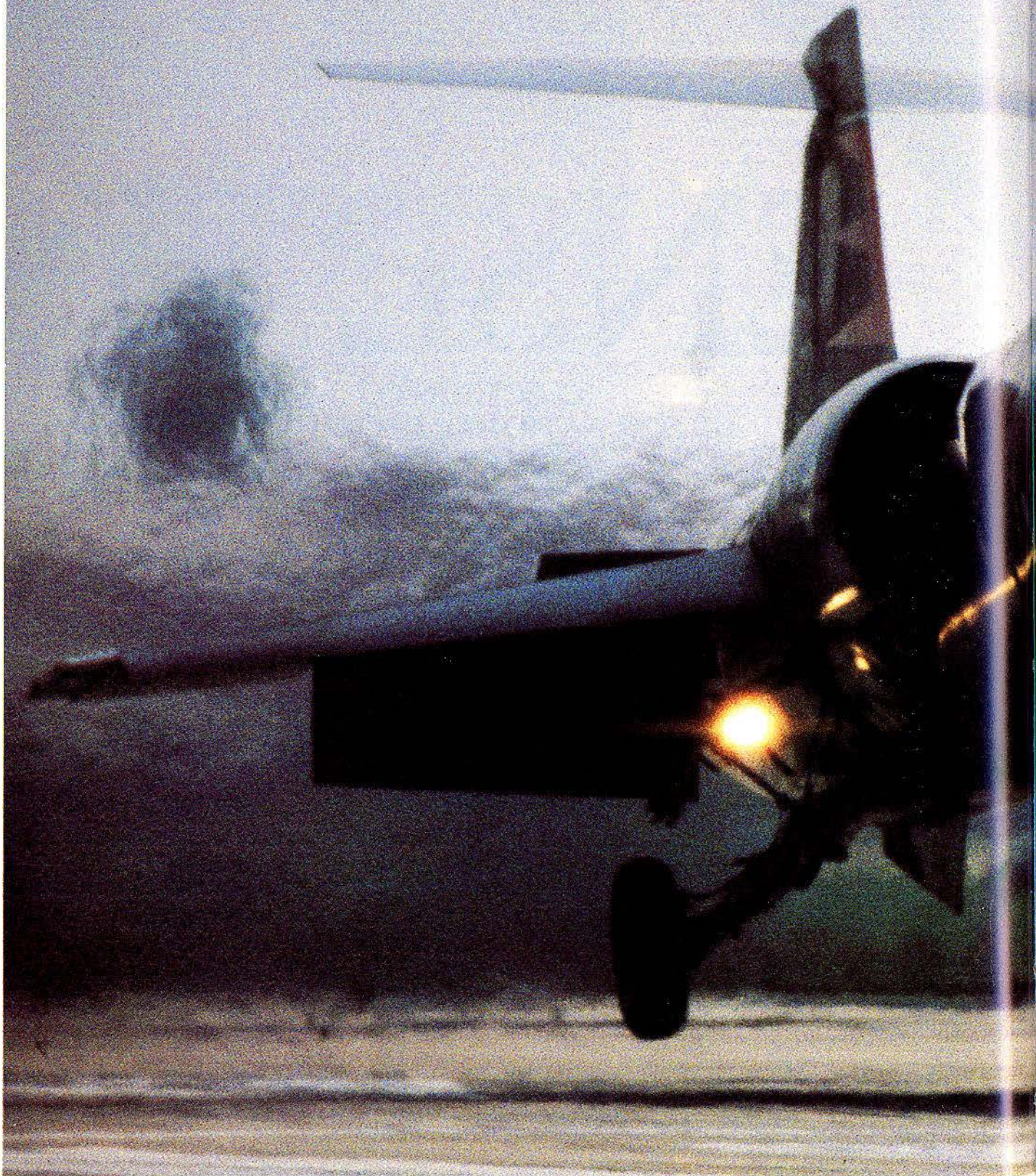
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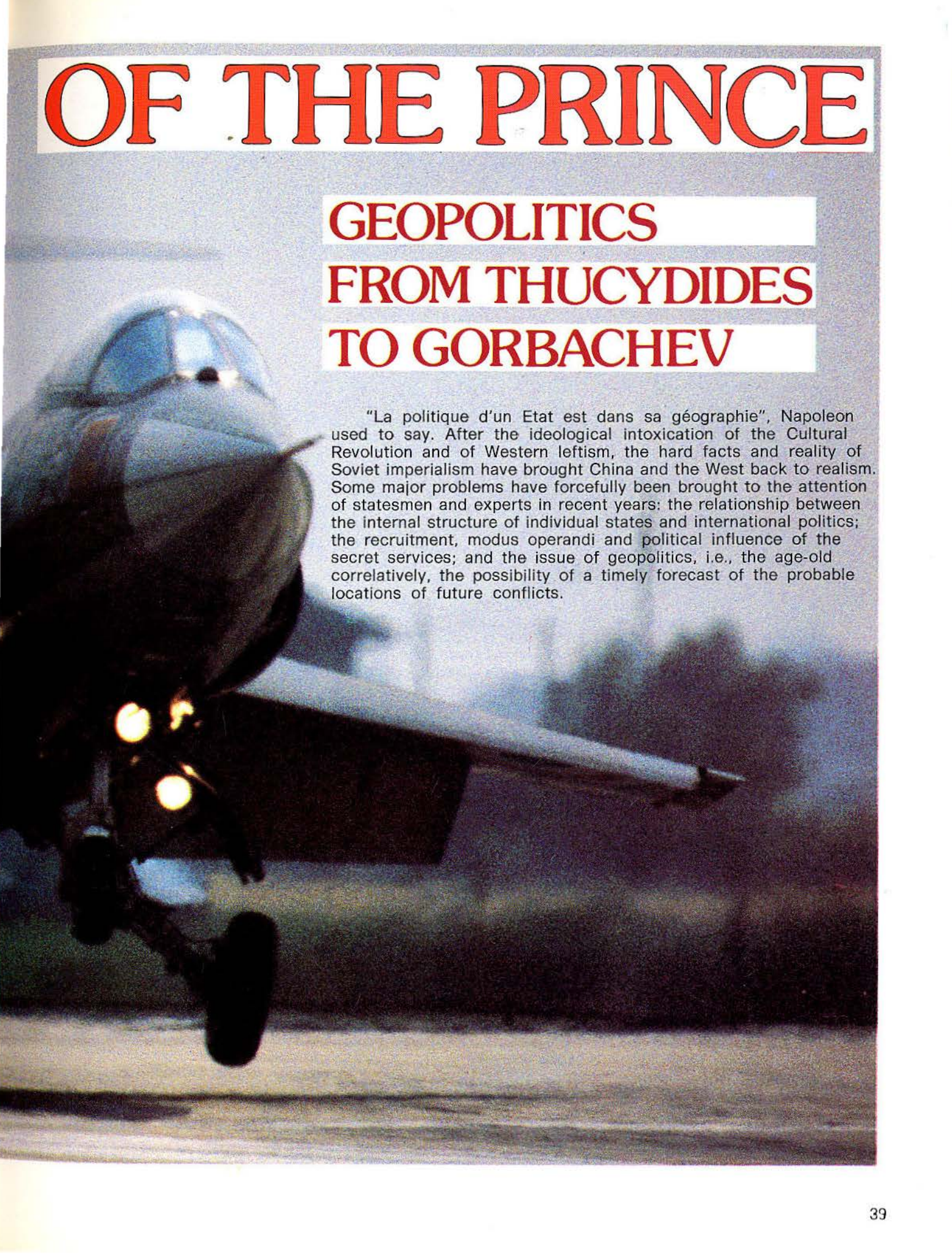


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THE SECRET



OF THE PRINCE



GEOPOLITICS FROM THUCYDIDES TO GORBACHEV

"La politique d'un Etat est dans sa géographie", Napoleon used to say. After the ideological intoxication of the Cultural Revolution and of Western leftism, the hard facts and reality of Soviet imperialism have brought China and the West back to realism. Some major problems have forcefully been brought to the attention of statesmen and experts in recent years: the relationship between the internal structure of individual states and international politics; the recruitment, modus operandi and political influence of the secret services; and the issue of geopolitics, i.e., the age-old correlatively, the possibility of a timely forecast of the probable locations of future conflicts.

Two works recently published in Italy and France offer essential contributions to these subjects. The work published in Italy is a new edition of a classic, the first and most important Western classic of political history: **Guerra del Peloponneso** ("The Peloponnesian War") of Thucydides, edited for Laterza by the communist historian Luciano Canfora. The French work is a book-interview by Christine Ockrent, who conducted a 340 page interview with the Count of Marenches, former head of SDECE, the French information and counterespionage service, between 1970 and 1981, and who is still, as is revealed, one of the most sought after counselors of world leaders, beginning with President Reagan.

Let us begin with Thucydides. In the seven volumes of **Guerra del Peloponneso**, he recounted the 27 years of war that involved, in two rounds, two blocks of *polis*, led on one side by an authoritarian, militarized, and economically autarchical state with stronger land forces (Sparta) and, on the other, by a democratic, economically and commercially vigorous state with the stronger naval forces (Athens). The lesser allies in the two camps had internal political regimes similar to that of the hegemonic power.

Of the two recent Italian editions of the work, published by Rizzoli-BUR and Laterza, the first has an introduction by Moises Finley, the second, by Luciano Canfora, who captures the contemporariness of Thucydides. Political history can teach something about the recurring quality of human affairs, given the essential sameness of human nature.

Thucydides, according to Canfora, is at the origin of a line of thinking that leads to Machiavelli, Ranke, Clausewitz (and, we would add, to Hobbes, Toynbee and, by a different route, Carl Schmitt). The key concepts of "realistic" political science are constants: "the impossibility of coexistence

between great powers, the necessary connection between repression and empire, the relationship between war and politics and the estrangement of ethics from politics. The end product of this complex reflection is the concept of **necessity**".

An empire is a necessity to one who has achieved a certain level of force, and it is against human nature to renounce it (I.76.1). Repression of the ruled by the rulers is a necessity. War is a necessity when, in a geopolitical area traditionally dominated by a great power, there is the ascension of another great power (I.23.6; I.88). Therefore, resumption of war (V.25.3) is a necessity, following peace with neither victor nor vanquished.

At the heart of this thinking is the idea that the development of material and moral resources of a nation and the **necessity** of war are strictly connected. "Development itself is the driving force behind hegemony: the maritime development of Athens, for example, produced the alliance, that is, the emergence, in a world until then dominated by Sparta, of an antagonist that 'forced' (anagkàsai) Sparta into war" (I.23.6). The impulse of the great powers towards hegemony is thus, in a certain sense, the driving force in the dynamics of history.

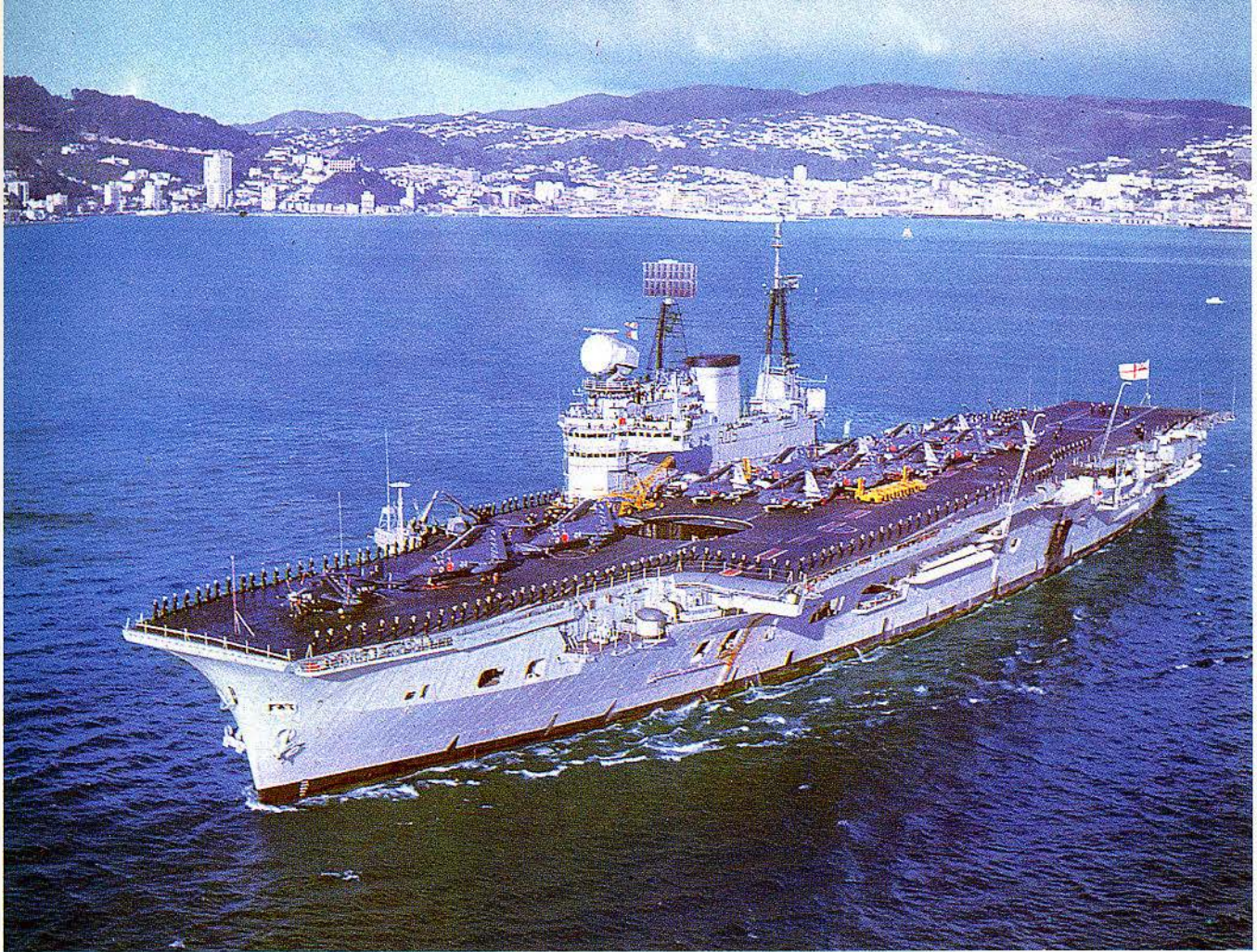
The ways in which hegemony is exercised are, therefore, the focus of Thucydides' thinking. He admires that apparently painless form of "ideological occupation" with which Sparta bound its allies to itself (I.19) and seeks to understand why Athens, the great democratic power, was led to the practice of violent repression. And he arrives at the pessimistic conclusion that the democratic city is incapable of administering an empire (III.37.1), precisely because its citizens, accustomed to the interpersonal relations typical of democracy, do not fully understand the inherently tyrannical nature of every empire.

Analyzing with dispassion the disturbing events of which

he was a protagonist (Thucydides had been a general in Thrace), the first great Western political scientist concluded that Athens had lost, not because of its defeat in the expedition against Syracuse or because of the alliance between Sparta and Persia, but because it had twice "beheaded the empire". Twenty-four centuries later, the great naval power and democratic hegemonic leader of its time, by "beheading its empire" with Watergate, witnessed within six years roughly ten states become authoritarian regimes and satellites of the opposing alliance.

Mario Tronti correctly observed in *Rinascita* (26 July '86): "From Thucydides through Machiavelli and Hobbes, Clausewitz and Ranke, throughout the long period of modern politics, these Athenian discourses are handed down to us". In 1972, Raymond Aron had published his book "Republique impériale, les Etats Unis dans le monde, 1945-1972". David Watt reviewed the English edition in the *Observer* and Thucydides' name emerged. In his "Mémoires", Aron replied: "Watt is quite right to place me in the shadow of Thucydides, but he is mistaken when he sees a difference between the Greek writer's tone in narrating the Sicilian expedition and the one I used in describing the American expedition in Vietnam".

In the nuclear age, the Thucydidean "law", according to which expansion by great powers in the same geopolitical area leads **necessarily** to total war, needs to be redefined and updated, to the effect that the process leads inevitably to **global conflict** that will be expressed in global strife: ideological, cultural and economic. Military conflict will take shape along three lines: "vertically" in the qualitative arms race; territorially, in conflicts conducted directly or through the use of third parties in peripheral areas of the empires; and, finally, through the use of terrorism. (It is noteworthy that, at the recent summit of the seven major Western powers held in Tokyo,



the political definition of **terrorist state** was set out for the first time in modern history).

From Thucydides to Count Marenches the leap may seem too great, the connection too strained. But this is not the case. In the first place, one must reflect upon the fact that all the great "realistic" thinkers in history had concrete experience in political leadership; and that, conversely, a few men of action in each age produced writings that were relevant from the point of view of political theory.

Thucydides was a general in Thrace. Aristotle was the tutor of Alexander the Great; and, in addition to the *Politica*, he wrote a large volume on comparative politics in which he analyzed 138 political regimes of his time. The volume was almost totally lost in the fire that destroyed the library of Alexandria: all that remains of it is one part concerning one government, "The Constitution of Athens". Machiavelli was an

ambassador and advisor of Pier Soderini, Perpetual Gonfalonier of Florence, which is to say the president for life of a presidential republic, and his theories were based upon concrete experience. What can one say of Armand Du Plessis, Duke of Richelieu, the greatest Catholic statesman of modern Europe? What can one say of Napoleon who, in letters written from the battlefield, set out in a few pages the essential ideas of geopolitics and modern constitutions as well? To give but a single example, all of the constitutional, juridical, political and administra-

The key concepts of "realistic" political science set out by Thucydides are: the impossibility of coexistence between great powers, the necessary connection between repression and empire, the relationship between war and politics and the separation of ethics and politics.

tive theory of the Fifth Republic is contained in a letter to Talleyrand written on 18 September 1797 while Napoleon was in Northern Italy contending with organizational problems in the Cisalpine Republic (1).

The question of the relationship between the political and institutional internal structure of individual states and their foreign policy was crucial to Thucydides.

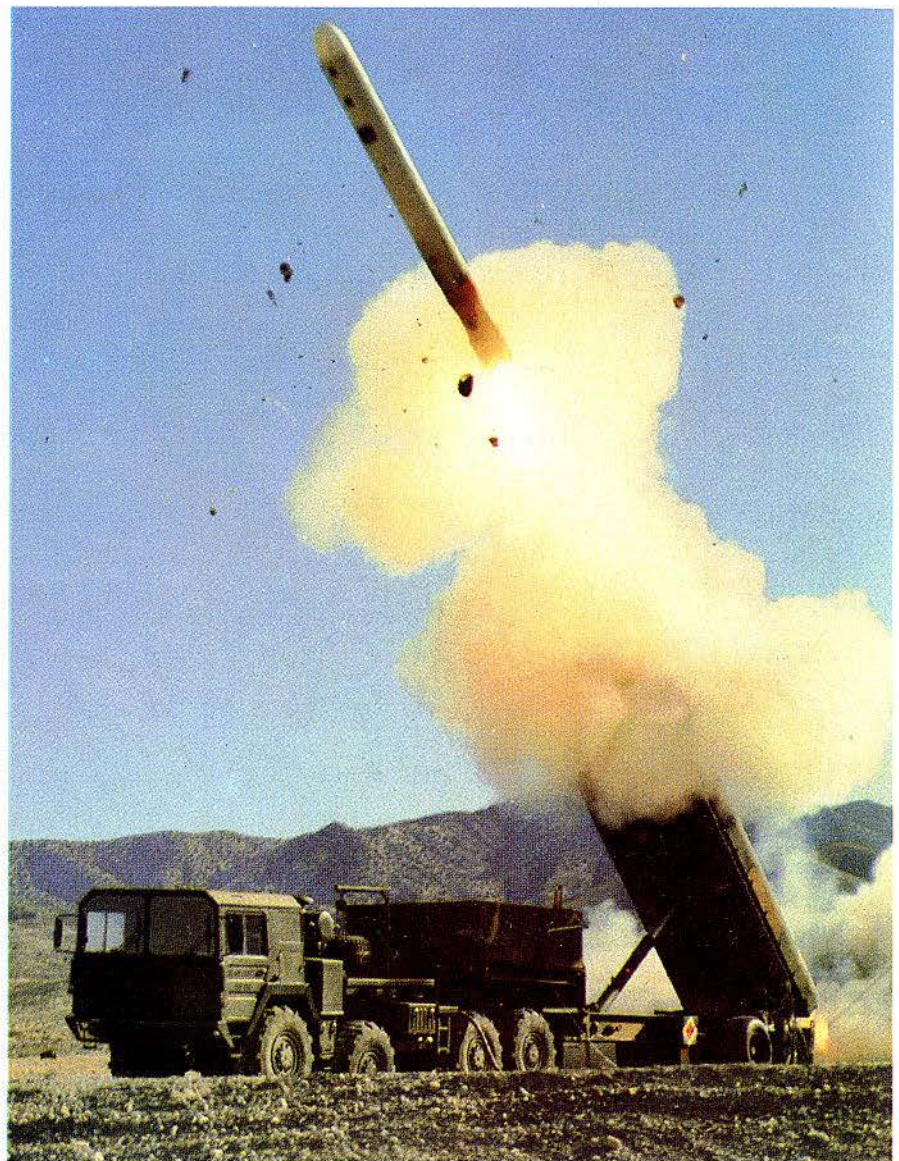
Global unification of politics ushers the development of geopolitics. Marenches reminds us that the annexation of Afghanistan and Baluchistan, as well as the construction of a large military port with access to the warm and open seas was prescribed back in 1725, in the testament of Peter the Great: a second Petersburg on the Arabian Sea, not strangled like the Baltic Sea by the bottleneck of Skagerrak (nor like Odessa by the Bosphorus, or Murmansk by ice, or Vladivostok by the Japanese Islands).

In his celebrated work, "A World Restored", Henry Kissinger, an intellectual who rose to high political offices, analyzes the containment policy of the democratic, maritime power of the age, Great Britain, with respect to that period's continental power, France, which, in the Napoleonic War, had demonstrated what *revolutionary wars* were about. That is, conflicts in which the stakes were not partial or limited (occupation and annexation of a city or region), but total (annihilation of the enemy).

Marenches' book, published last September for the Stock editions, "Dans le secret des Princes", provides fertile material for thought on all these questions for the past 20 years and for the future.

Marenches begins with a brief account of his life: these chapters of the book-interview offer an instructive insight into the way the West selects its leaders. Marenches comes from a family with a thousand-year history: originally from the Piedmont region, its feudal title was confirmed by Frederick Barbarossa in 1186. His father, who served in the same regiment as De Gaulle in the first world war, became aide-de-camp to General Pershing, then commander of the American expeditionary force in France, and in that headquarters struck enduring friendships with men like Marshall and Patton who, 20 years later, would be leaders in the armed forces and in American foreign policy formulation.

After 1940, the young Marenches escaped from occupied France, fought in the resistance and served on the staff of General Juin during the Italian campaign. The whole interview is rich with recollections of personal friendships and family ties between the French aristocracy and the American ruling class. Marenches says clearly that he considers himself a French patriot and, at the same time, a citizen of the West, intended as the land of liberty. In answer to a specific question



by Ockrent as to which position he would take in the event of a conflict between France and the United States, he admits that the choice would be very difficult. This shows how the experience of two world wars has created in the ranks of the ruling classes of the three great

In the nuclear age, Thucydides' "law", according to which expansion by great powers in the same geopolitical area leads necessarily to total war, needs to be redefined and updated, to the effect that the process leads inevitably to global conflict that will be expressed in ideological, cultural, economic and military strife.

allies (United States, France and Great Britain) a moral and practical symbiosis which would be difficult to deny.

In 1970, Marenches was asked to become Director-General of the SDECE (Service de Documentation Exterieur et de Contre-Espionage) by President Pompidou; he accepted and held that post until 1981. Mitterrand invited him to remain in that post. Marenches' response was: "I could do it only if you will not have communist ministers". That was not to be and Marenches resigned. Subsequently, the French secret services were variously reorganized, not always to best effect.

Marenches describes international political life as seen



from "inside" the most efficient Western secret service, in the last 16 years. As soon as he arrived in the Rue de Tourelles, he found 10 tons of Gestapo files on the period of the Nazi occupation of France. He discovered at once that many so-called partisans (who had based a career on this claim) had been, in fact, on the Gestapo payroll.

These revelations together with other observations regarding French internal politics created a furor at the time and some echoes were heard even in Italy. But this is not the most interesting part. Moreover, it takes up few of the 340 pages of text. The question of the Gestapo files is important for

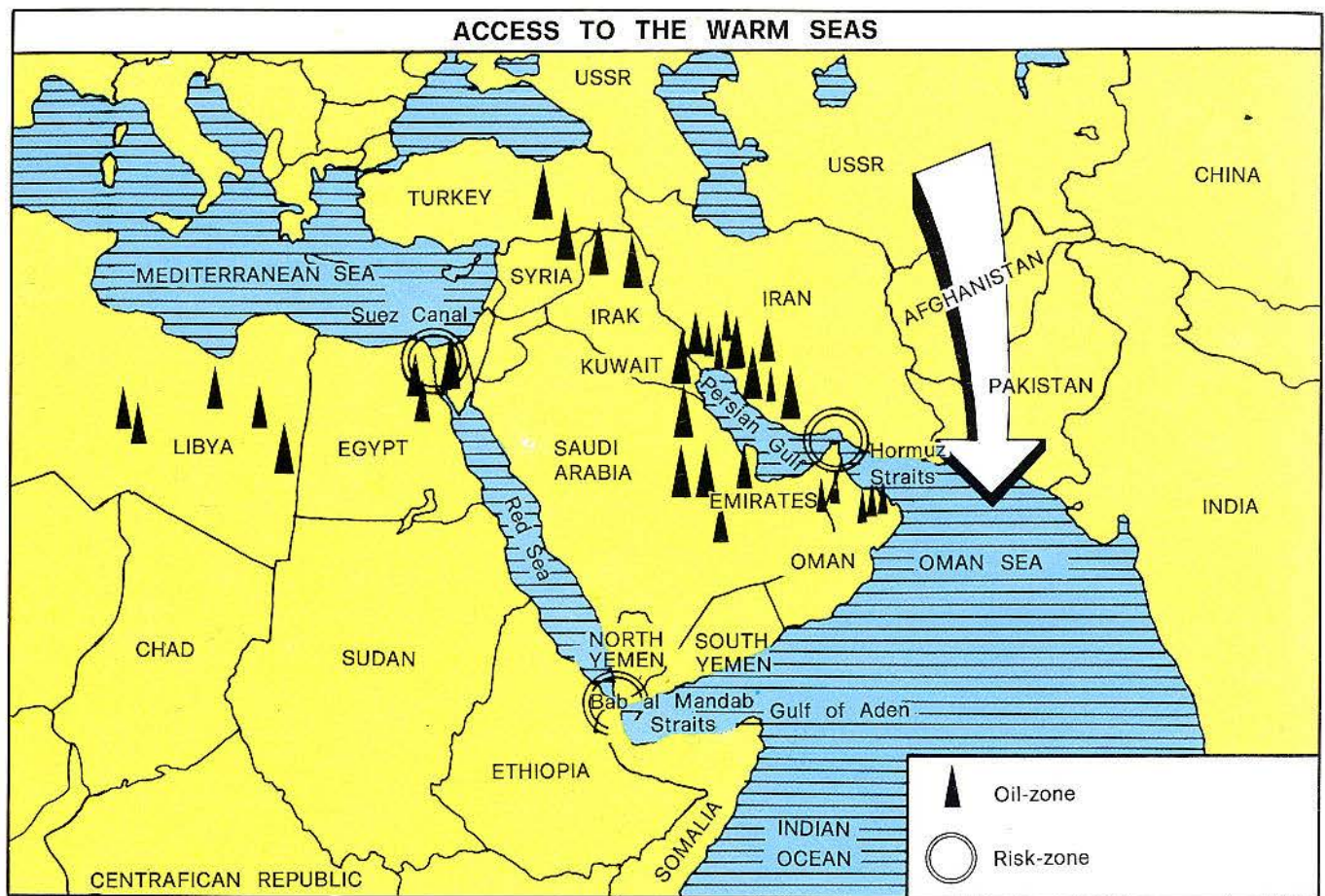
another reason: because Marences reveals that, while each of the three Western powers has only one part of the files, the Soviets have them all and are therefore able to blackmail and influence many people (there is a cautious reference to Kurt Waldheim's favoring the East during his tenure as president of the U.N.).

Of greater importance is

Marences foresees three major problems in the next century: uncontrolled population growth, desertification of certain areas of the planet and global expansionism – military, political and ideological in a locked matrix – of the Soviet empire.

the section dedicated to the geopolitical analyses offered by Marences to the heads of state of various countries: Pompidou, Giscard, Nixon, Reagan, Hassan II, the Shah of Iran, and Juan Carlos of Spain, observations which he shares with us and to which he adds a personal appraisal of the future.

Marences, a connoisseur of men and of the history of nations, is a disciple of the great line of classic political thought. At his time Thucydides had already clearly seen that an increase in geographic dimensions, of demographic and economic power and, most important, of the maritime power of a country, inexorably led it to establish an empire.



Thucydides observed the contraposition of an authoritarian, militarized, economically stagnant state with powerful land forces (Sparta) and a domestically democratic, economically and commercially vigorous state with preponderant naval power (Athens), both at the head of a "camp" of allies with analogous political regimes. A conflict of this type is resolved in favour of the authoritarian continental power in two cases: when the continental power also develops a strong navy (it was to prevent this possibility that Great Britain took part in the war against the Germany of Wilhelm), or when the democratic power collapses as a result of internal politics, as was the case with Athens, which lost because it had twice "beheaded the empire" in a, so to speak, *Watergate ante litteram*.

Watergate decapitated American foreign policy (as well as the secret services: and not just the CIA, Marenches observes, but the FBI as well).

In those years, the Soviets conquered, either directly (Afghanistan) or indirectly, roughly ten countries.

Marenches provides an analysis of geopolitics and reveals that with statesmen he always discussed geopolitics. It is conceivable that the extremely interesting "Atlas stratégique" by G. Chaliand and J. P. Rageau, the first available atlas on the power relationships of world geopolitics, published by Fayard in 1983, was suggested by Marenches.

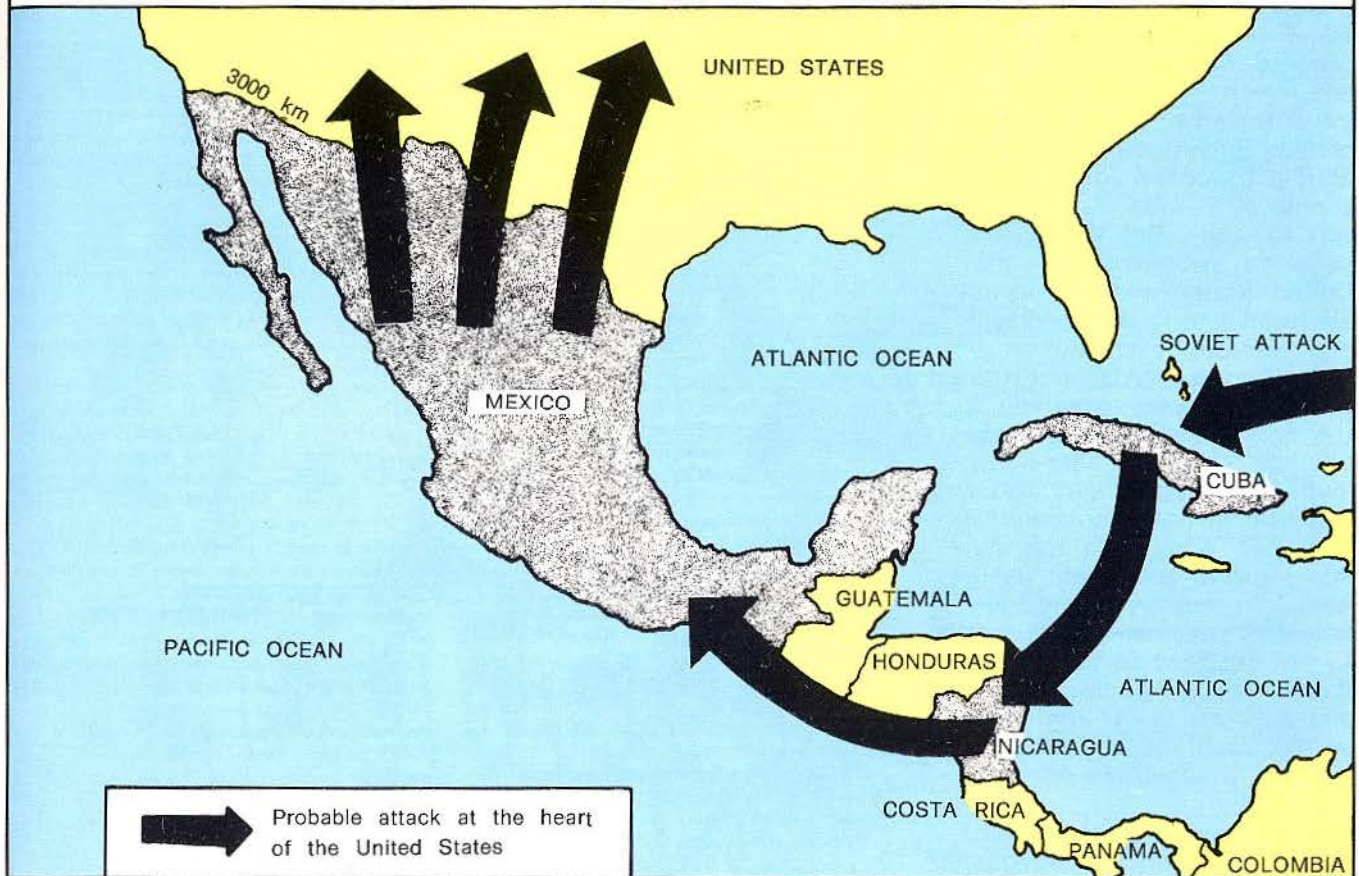
It is impossible to review here all of Marenches' analyses, which are interwoven with

For the past 25 years Marenches has predicted two major events. The first is that the Soviets would invade Afghanistan, then Baluchistan Pakistan, and build a major military seaport on the Arabian sea opposite the Strait of Hormuz which closes off the Persian Gulf.

accounts of events in which he participated. He underscores the power and political importance of the resistance by UNITA of Savimbi, in Angola. He recounts how the SDECE deposed Bokassa in Central Africa, the operation in Shaba (southern Zaire), their difficulties and the conditions which brought about their success. He tells of how he warned the Shah of Iran of plots against him, and of his plan to neutralize Khomeini, vetoed by Giscard. And of how he warned the Vatican in January of 1980 of an imminent assassination attempt on the Pope (and one might ask whether he warned the Italian authorities and, if not, why not).

Here we shall limit ourselves to an analysis of his two major predictions and his final advice for the future. Marenches explains that for the past 25 years he has consistently predicted two major events. The first is that the Soviets would invade Afghanistan, then Pakistan's Baluchistan, and build

HYPOTHESIS OF AN ATTACK TO THE UNITED STATES



a major military seaport on the Arabian sea opposite the Strait of Hormuz which closes off the Persian Gulf. Such course of action had been advocated in the testament of Peter the Great in 1725.

The Soviet have four fleets, in Murmansk, Leningrad, Odessa and Vladivostok, all four of which are located in seas that are either closed, frozen or vulnerable to blockade. They need a large warm-water port in an open sea territorially connected to their Eurasian empire. After the invasion of Afghanistan there will be the destabilization or invasion of Baluchistan.

The other major event he predicted is a direct attack on the United States through Central America and Mexico, both of which are overpopulated. Cuba is the springboard, Nicaragua the detonator and Mexico the potential explosive. Mexico will have a population of 120 million in 1999, while millions of clandestine immigrants are

already pouring into the United States where neither national identification documents nor knowledge of the English language is required and where the Hispanic community, America's largest ethnic community, often insists on preserving its original language.

We would not want to pass judgment on the validity of these predictions. On the other hand, we are certain that, given the facts presented in these chapters, President Reagan has been strongly influenced by Marencches' analysis with regard to at least two points: Nicaragua and South Africa. We have already addressed the subject of Nicaragua. With regard to South

The second major event he predicted is a direct attack on the United States through Central America and Mexico, both of which are overpopulated. Cuba is the springboard, Nicaragua the detonator and Mexico the powder keg.

Africa, Marencches recounts how, after illustrating its geopolitical importance, he told Reagan: "the territory of the United States contains four of the eight strategically essential raw materials; Russia has all eight. But South Africa also has all eight". He showed Reagan South Africa's mining charts. Reagan took them and asked whether he might keep them since, according to him, the CIA was at that point incapable of more than satellite reconnaissance and propaganda abroad.

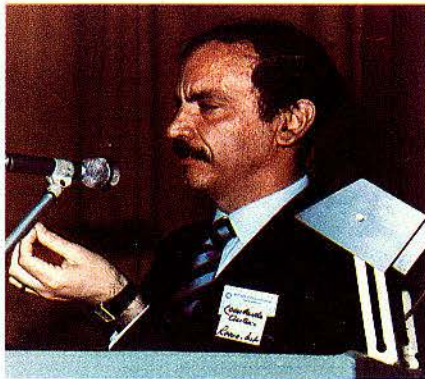
Marencches foresees three major problems in the next century: uncontrolled population growth (Nigeria will have 325 million inhabitants in the year 2020), desertification of certain areas of the planet (the Sahel being the major one), and global expansionism (military, political and ideological in a locked matrix) of the Soviet empire.

In the face of this menace, he proposes, with regard to Europe, a program of political, economic and military collabora-

tion between Western Europe and the Maghreb in the broad sense (that is, including all the "coastal states" of that internal sea which is the Sahara). We intuit that the "political" leader of this Euro-African quasi-nation, of this European *Risorgimento*, should be France, as Piedmont was for Italy. But this should occur in symbiosis with the United States and not as an alternative to it, as De Gaulle had wanted. It should be structured like NATO, but without the "N", that is, extending to the entire north African geopolitical area; an inter-allied, multidisciplinary military and civil supreme military command; a European army with the same standardized equipment as the American military, with four branches: nuclear forces, battle forces destined to the European theater, a rapid deployment force and an army in the rearguard, on the Swiss model additional to, and not a substitute for other forces).

In times of "weakness of thought", Marenches advocates, with the events he recounts and the questions he addresses, "strength of political thought".

Antonio Lombardo



Antonio Lombardo is a Professor of Political Science at the Higher School of Public Administration. He also teaches Administrative Science at the LUISS University in Rome. He has contributed to numerous Italian and foreign newspapers and magazines and has edited ten volumes, among which "Il sistema politico del Giappone" (Angeli, 1975) "La crisi delle democrazie industriali" (Vallecchi, 1977); "La grande riforma. Governo, Istituzioni, Partiti" (Sugarco, 1984); "Come saremo governati. Scienza dell'amministrazione e politiche pubbliche in Italia" (Angeli, 1987). He is a member of the National Executive Council of the Italian Atlantic Committee.

NOTE

(1) Recently the text of that famous letter was published in no. 2/84 of *Rivista Italiana di Scienza Politica*, dedicated to institutional reforms. The question of the relationship between parliament, government and executive administration is analyzed carefully by Gianfranco Miglio and Antonio Lombardo in that issue. The entire text of Napoleon's letter follows.

Au Ministre des relations extérieures

Quartier général, Passariano, 3^e jour complémentaire an V (19 septembre 1797).

J'ai reçu, Citoyen Ministre, votre lettre confidentielle du 22 fructidor, relativement à la mission que vous désirez donner à Sieyès en Italie. Je crois effectivement, comme vous, que sa présence serait aussi nécessaire à Milan qu'elle aurait pu l'être en Hollande et qu'elle l'est à Paris.

Malgré notre orgueil, nos mille et une brochures, nos harangues à perte de vue et très-bavardes, nous sommes très-ignorants dans la science politique morale. Nous n'avons pas encore défini ce que l'on entend par pouvoir exécutif, législatif et judiciaire. Montesquieu nous a donné de fausses définitions, non pas que cet homme célèbre n'eût été véritablement à même de le faire, mais son ouvrage, comme il le dit lui-même, n'est qu'une espèce d'analyse de ce qui a existé ou existait; c'est un résumé des notes faites dans ses voyages ou dans ses lectures.

Il a fixé les yeux sur le gouvernement d'Angleterre; il a défini, en général, le pouvoir exécutif, législatif et judiciaire.

Pourquoi, effectivement, regarderait-on comme une attribution du pouvoir législatif le droit de guerre et de paix, le droit de fixer la quantité et la nature des impositions?

La constitution a confié avec raison une de ces attributions à la chambre des communes, et elle a très-bien fait, parce que la constitution anglaise n'est qu'une charte de privilèges: c'est un plafond tout en noir, mais bordé en or.

Comme la chambre des communes est la seule qui, tant bien que mal, représente la nation, seule elle a dû avoir le droit de l'imposer; c'est l'unique digne que l'on a pu trouver pour modifier le despotisme et l'insolence des courtisans.

Mais, dans un gouvernement où toutes les autorités émanent de la nation, où le souverain est le peuple, pourquoi classer dans les attributions du pouvoir législatif des choses qui lui sont étrangères.

Depuis cinquante ans, je ne vois qu'une chose que nous avons bien définie, c'est la souveraineté du peuple: mais nous n'avons pas été plus heureux dans la fixation de ce qui est constitutionnel que dans l'attribution des différents pouvoirs.

L'organisation du peuple français n'est donc encore véritablement qu'ébauchée.

Le pouvoir du gouvernement, dans toute la latitude que je lui donne, devrait être considéré comme le vrai représentant de la nation, lequel devrait gouverner en conséquence de la charte constitutionnelle et des lois organiques; il se divise, il me semble, naturellement en deux magistratures bien distinctes, dont une qui surveille et n'agit pas, à laquelle ce que nous appelons aujourd'hui pouvoir exécutif serait obligé de soumettre les grandes mesures, si je puis parler ainsi, la législation de

l'exécution: cette grande magistrature serait véritablement le grand conseil de la nation; il aurait toute la partie de l'administration ou de l'exécution qui est par notre constitution confiée au pouvoir législatif.

Par ce moyen, le pouvoir du gouvernement consisterait dans deux magistratures, nommées par le peuple, dont une très-nombreuse, où ne pourraient être admis que des hommes qui auraient déjà rempli quelques-unes des fonctions qui donnent aux hommes de la maturité sur les objets du gouvernement.

Le pouvoir législatif ferait d'abord toutes les lois organiques, les changerait, mais pas en deux ou trois jours, comme l'on fait: car, une fois qu'une loi organique serait en exécution, je ne crois pas qu'on pût la changer avant quatre ou cinq mois de discussion.

Ce pouvoir législatif, sans rang dans la République, impassible, sans yeux et sans oreilles pour ce qui l'entoure, n'aurait pas d'ambition et ne nous inonderait plus de mille lois de circonstance qui s'annulent toutes seules par leur absurdité, et qui nous constituent une nation sans lois avec trois cents in-folio de lois.

Voilà, je crois, un code complet de politique, que les circonstances dans lesquelles nous sommes trouvés rendent pardonnable. C'est un si grand malheur pour une nation de trente millions d'habitants, et au dix-huitième siècle, d'être obligée d'avoir recours aux baïonnettes pour sauver la patrie! Les remèdes violents accusent le législateur; car une constitution qui est donnée aux hommes doit être calculée pour des hommes.

Si vous voyez Sieyès, communiquez-lui, je vous prie, cette lettre; je l'engage à m'écrire que j'ai tort; et croyez que vous me ferez un sensible plaisir, si vous pouvez contribuer à faire venir en Italie un homme dont j'estime les talents et pour qui j'ai une amitié tout à fait particulière. Je le considérerai de tous mes moyens, et je désire que, réunissant nos efforts, nous puissions donner à l'Italie une constitution plus analogue aux mœurs de ses habitants, aux circonstances locales et peut-être même aux vrais principes, que celle que nous lui avons donnée. Pour ne pas faire une nouveauté au milieu du fracas de la guerre et des passions, il a été difficile de faire autrement.

Je me résume:

Non-seulement je vous réponds confidentiellement que je désire que Sieyès vienne en Italie, mais je pense même, et cela très-officiellement, que, si nous ne donnons pas à Gènes et à la République cisalpine une constitution qui leur convienne, la France n'en tirera aucun avantage: leurs corps législatifs, achetés par l'or de l'étranger, seront tout entiers à la disposition de la Maison d'Autriche et de Rome. Il en sera, en dernière analyse, comme de la Hollande.

Comme la présente lettre n'est pas un objet de tactique, ni un plan de campagne, je vous prie de la garder pour vous et pour Sieyès, et de ne faire usage, si vous le jugez à propos, que de ce que je viens de vous dire sur l'inconvenance des constitutions que nous avons données à l'Italie.

Vous verrez, Citoyen Ministre, dans cette lettre, la confiance entière que j'ai en vous, et une réponse à votre dernière.

Je vous salue.

Bonaparte

Collection Napoléon. Correspondance de Napoléon I^{er}, publiée par ordre de l'Empereur Napoléon III, Paris 1959, III, pp. 313-315.

GEOPOLITICS



Da stampa dell'epoca - Zanoli:
Militari e civili d'Italia -
rappresentanti le varie parti
a Milano alle truppe austriache
per la Russia.

Copiate integralmente anche
dalla loro uniformi
disegnate i colori.

Il Vice vestiva ora l'uniforme
francese - blu; ora quella
italiana - verde.

Uniforme
alla francese

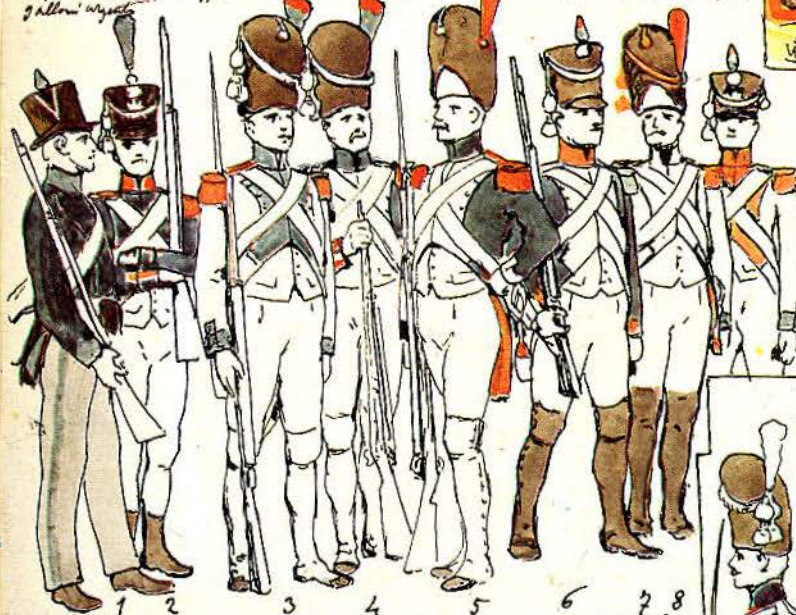
I Generali hanno tutte gli ornamenti
in argento; sul petto della spallina
d'istinto in oro. - Il colletto
appena qualche volta rosso ed alcuni
fasciati in rosso; sempre ora picchietti
tutti in rosso. L'abito è verde.

10. Uff.
3. 1. Dr.
9. Capitano
8. Dragoni G.A.
- 7.

1. Principe Eugenio
2. Guardia d'onore
di Brescia
- 3.

Capo tambura con cappello e tamburino uniformi
galloni argento

come le truppe, con



1. Borghese bresciano
2. Cacciatori (ex Corsicotti dell'G.R.)
3. Uomini
4. Carabinieri
5. Granatieri
6. Volteggiatori
7. Granatieri
8. Fucilieri

1. Collegio degli orfani
2. Pompiere
3. Compagnia
di riserva

4. Volontari di Milano
5. Guardia di Milano e
Lombardia
vedi pag. seg.



6. Guardie a cavallo
7. Artiglieria a cavallo
8. Truppa d'artiglieria
9. Cacciatori a cavallo
10. Truppa Art. G.R.
11. Guardie a piedi
12. Art. a piedi G.R.



Alcuni
blu

THE TANKS OF THE NINETIES

WHAT PROPELLERS?



The modern battle tank is a vehicle characterized by high specialization, owing to the manifold performances and requirements it must meet – absolutely different from those of any other vehicle – and to the standards of quality to which it must conform.

It is not only a vehicle suitable for covering distances transporting men or supplies – typical use of a common vehicle – but also and especially for performing other tasks of primary importance on rough terrain, often impracticable to other vehicles.

The first basic difference, for example, is that, in order to solve the problem of mobility concerning the common vehicle, interventions have been made outside and complementary to it, i.e. construction of roads, bridges, tunnels, the improvements of which are an integrant part of the progress achieved by those vehicles.

In order to solve the same problem for the combat tank, one must instead work on the tank itself, equipping it with all the systems that enable it to move easily off the road and overcome not only the natural obstacles but also the man-made ones that could stand in its way.

The tank must be envisaged in an operational environment, in which only 40% of its movement is on road; for the rest it will have to operate off road in order to meet the fundamental needs of the war actions: during these actions, the superiority levels will be put to test and will entail the survival of the tank itself and of its crew, as well as the positive outcome of the battle.

The consequence is that each component shall be the result of painstaking studies aimed at adapting to the operational requirements all that the most advanced technologies place at our disposal.

In this article we are dealing with one of the essential organs of the tank: the engine. Starting from the strict requirements it must meet – summed up on table 1 – we shall present a comprehensive picture and make a critical analysis of the current power units and those still on the drawing-board, in view of presenting the predictable development trends of the engines that will equip the tanks of the coming generations.

Today the possibility to employ new materials; fibres, ceramics, plastics and elastomers, compounds of elements with different but complementary characteristics, and the remarkable progress in electronics as well as in mechanical-hydraulic and electromagnetic systems, let us foresee solutions which were unthinkable in the past. Thanks to these solutions it will be possible to increment horsepower density (so as to be able to contain the bulk of the engine in no more than 0.80-1 m³) and fuel consumption (20-30% less than at present).

The new battle tank must be characterized by very high specialization.

THE STATE OF THE ART OF ENGINES FOR MILITARY USE

TRADITIONAL ENGINES

With very few exceptions, and only in the field of low-power engines, practically the totality of the engines for military and industrial use are of the four – or two – stroke diesel type.

The diesel engine is a well-known machine, with over 80 years of development, which at the present has the highest thermal efficiency. This is obviously a quality of primary importance, owing to the necessity of maximizing the logistic performance, i.e. to permit, first of all, the maximum autonomy or

low consumption per km, considering the high cost of fuel and also bearing in mind that its availability is not only, confined to certain privileged zones but is also assuredly going to diminish progressively, even if not immediately.

It is precisely for this reason that the diffusion of the diesel engine goes beyond the field of industrial and commercial transport – where the cost per km of a transported ton is essential – into the area of personal transportation, i.e. the automobile.

The difference in power and specific gravity, considerably unfavourable compared to the Otto-cycle engines, is partly offset by the addition of turbocompressors, although this solution sometimes also increases the already

REQUISITES OF TANK ENGINES

Table 1

Requisites	Purpose
1. High absolute power.	High power/weight ratio; high mobility.
2. High volume and mass power.	Better exploitation of the volumes to the advantage of: <i>fire power</i> ; <i>mobility</i> (less volume to armour); <i>protection</i> (more armour for equal weight); <i>range</i> (larger fuel tanks).
3. Limited height.	Lower "silhouette" (passive protection).
4. Parceled auxiliary components.	Better exploitation of available volume (see 2).
5. Limited fuel consumption.	Longer range or, at equal range, greater mobility and/or protection.
6. Multifuel capability.	Better logistic qualities of the propeller unit.
7. Reduction of elimination of cooling systems.	See 2; increased reliability.
8. Limited noise.	Comfort and protection.
9. Low IR radiations.	Protection from IR detection.
10. Capability of operating completely immersed in fresh water or seawater.	Greater mobility.
11. Capability of operating in extreme conditions of gradient (60%) and side slope (36%).	See 10.
12. Starting and operating capability in extreme climatic conditions (from +50 °C to -30 °C).	See 10.
13. Good operation at altitudes up to 4000 m; keeping the homologated power up to 1700 m. Very good operation in dusty desert areas.	Flexibility of employment.
14. High power and complete shielding of the electrical equipment.	Passive protection and better electronic connections.
15. Availability of many power takeoffs.	Flexibility of employment.
16. Must to fail if stored at extreme temperatures (from +70 °C to -60 °C).	Ruggedness.
17. Highest reliability.	Limited times of inactivity.
18. Easy replacement of the whole unit.	See 17.
19. Reduced maintenance.	See 17.

rather high cost, due to construction reasons.

The continuous advance of the turbo, enhanced by its increased diffusion and by the acquired greater efficiency in its coupling with the engine, promotes the increment of its specific power and thermal efficiency, and despite the opinion held by some, that the diesel engine has already reached the top of its possibilities, this seems still rather far.

We maintain this even though the machine has some characteristics which cannot be easily accepted, such as certain inevitable mechanical complications: its bulk and weight, the difficulty of starting it at low temperatures, its noise, the production of pollutants, such as nitrogen oxides, aldehydes and smoke. On a quality-cost base, these data still keep the diesel engine at a phase of necessary improvements.

As regards efficiency, the declared values are often realistic for the big engines, but they are much less so for the small ones.

Especially in relation to indirect-injection engines of limited cubic capacity generally used for automobiles, if the advantage vis-a-vis the Otto-cycle engine can be considered positive at partial load, at full load is rather less positive and sometimes nil.

The reduction of consumption deriving from equipping the same vehicle with this or that engine is not only produced by the increase of its global performance, but also by a notable reduction of the available power, reduction which can sometimes reach values of 30 to 40%.

By injecting gasoline into the Otto-cycle engines, and by adopting the relevant electronic control systems, which are also steadily spreading, this difference tends to decrease.

But if one considers turbocharged engines starting from a few hundred kW - design standards being equal - these considerations fall completely.

In relation to tank propellers, and considering the growing power needs, on table 2 are listed the main characteristics of the engines with power over 600 kW.

It can be noticed that the maximum power per unit of capacity, weight and volume of the engines are on the average approx. 40 kW/l, 0.52 kW/kg and 460 kW/m³; with peaks for four-stroke engines of 66.8 kW/l for the Poyaud V8X 1500 "Hyperbar" and 0.81 kW/kg and 1138 kW/m³ for the MTU "MT 883", at development stage.

To the above one may add the two-stroke Detroit Diesel Allison "12V-71-TA" with 48.1 kW/l and 416 kW/m³. Consumptions average around 230-240 g/kW/h at the lowest level. But we are still far from the values considered adequate to the military requirements.

Nevertheless, even conceived as they are now, these engines can achieve further substantial improvements of their characteristics through the review of their general design, together with a better understanding of the combustion process and further developments of the feeding system (turbocompressors,

	Poyaud V12X 1100	Poyaud V8X 1500	Rolls Royce Condor V12-1200A	Teledyne TCM- AVDS 1790-5A	Teledyne AVCR-1790	Teledyne AVCR 1360*	DDA 12V-71-TA	MTU MB 873 Ka 501	MTU MT 883*	Cummins LCR-TCA*
Cycle strokes	4	4	4	4	4	4	2	4	4	4
Cylinders	12 V	8 V	12 V	12 V	12 V	12 V	12 V	12 V	12 V	8 V
Bore (mm)	142	142	135	146	146	146	108	170	140	133,4
Stroke (mm)	130	130	152	146	146	146	127	175	136	120,7
Capacity (l)	20,64	16,47	26,11	29,34	29,34	29,34	13,96	47,6	25,1	14,8
Power (kW)	808	1100	895	677	895	1100	671	1104	1104	735
Revolutions (rpm)	2500	2500	2300	2400	2400	2400	2500	2600	3000	3200
Weight (k)	—	2300	1888	—	2313	2029	—	2590	1360	1500
Volume (m ³)	2,29	1,82	2,19	3,28	3,61	2,41	1,611	3,68	0,97	1,22
kW/l	39,1	66,8	34,3	23,1	30,5	37,5	48,1	23,2	44,2	49,7
kW/kg	—	0,48	0,47	—	0,39	0,54	—	0,43	0,81	0,49
kW/m ³	350	605	408	210	250	456	416	300	1138	602
MEP-Nmax (bar)	18,8	32	17,9	11,5	15,3	18,7	11,5	10,7	17,7	18,6
MEP-max (bar)	—	—	19,8	12,7	15,7	—	12,3	12,4	—	—
Compression ratio	15	7,8	12	14,5	22÷10	22÷10	17	18	16	var.

* In development.

injectors and pumps). To the same end, one must not overlook the availability of more modern technologies concerning tribological conditions and the improved foundry and manufacturing processes, which are developing very fast.

NEW-CONCEPTION ENGINES

The constant spur to progress, the competition factor, the incessant demands for more and more numerous and strict specifications, have led to proposals and studies on engines of different conception, such as the rotary engine, the gas turbine and, without leaving the traditional field of the reciprocating engines, the "Hyperbar" and the adiabatic "Turbocompound".

The technical concepts of these solutions are of course more than sound. Nevertheless, to attain our goal, we must have at our disposal an adequate ideational and productive capability as well as the capability to conduct a well planned work of research for the verification and dimensioning of the parameters concerned and the corresponding available funds.

The rotary engine.

The rotary engine belongs to the category of the internal combustion, rotary-expansion engines, repropounded by Felix Wankel in 1957.

Among the holders of the relevant patents, we wish to mention in particular the "Curtis Wright" firm, which has been studying and experimenting for several years this type of engine for military use. It is currently developing various experimental specimens. They are machines of various powers, achieved through the coupling together of 2, 3 or 4 rotors.

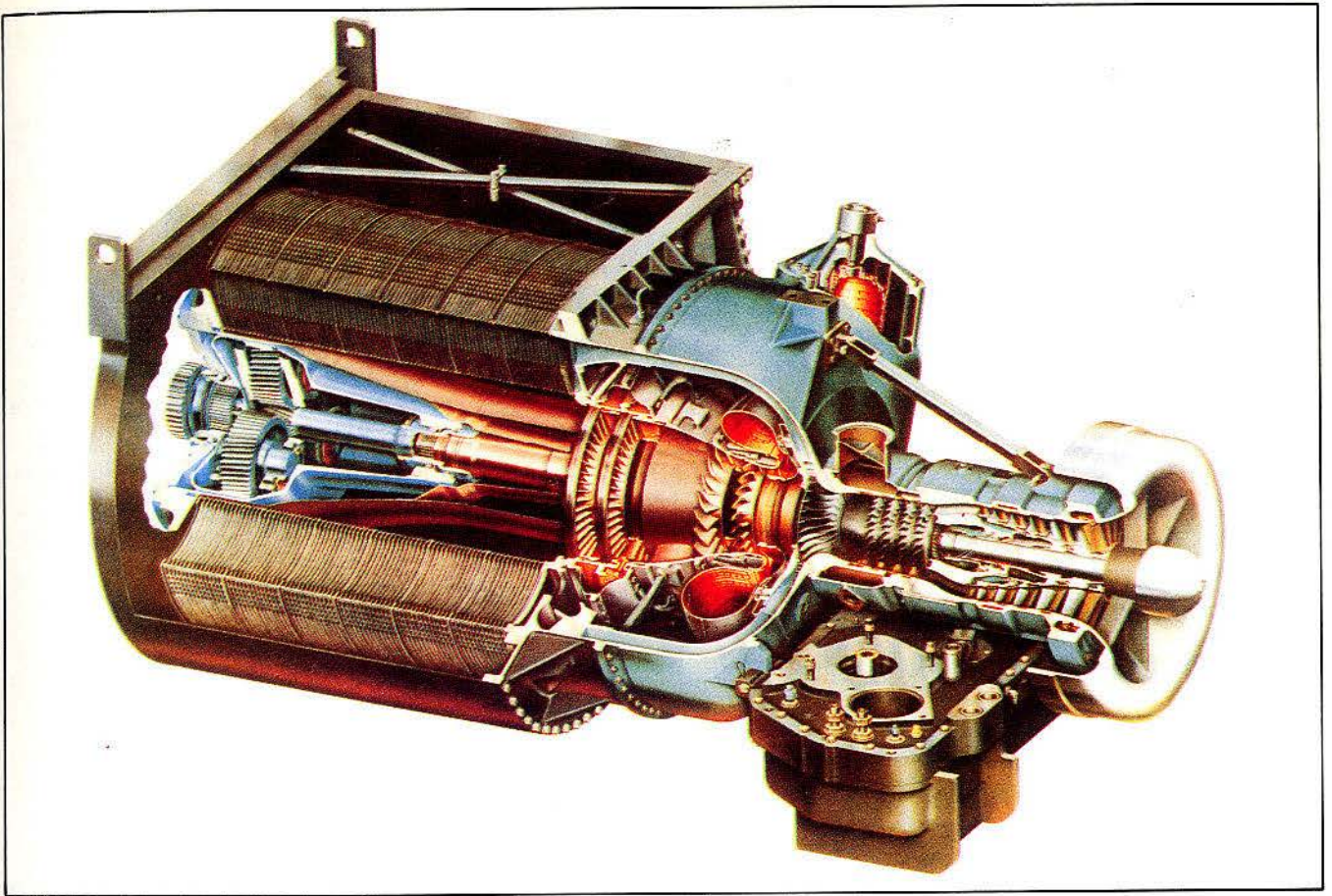
The power of each element, having a capacity of 5.8 l with 280 kW, can be reckoned to increase up to 600 kW, owing to which, with this datum as a base, it could be theoretically possible to go up to 1200 kW for two rotors, with an exceptionally high performance: 140 kW per litre of capacity.

At present, only two units have been produced: a two-rotor unit with 560 kW and a four-rotor unit with 1120 kW.

The specific power of these two units, 48 kW/l, is certainly remarkable but even more astonishing are their characteristics of compactness (1270 kW/m³) and lightness (1.30 kW/kg).

The stated positive prospects are:

- capability to operate correctly with very weak mixtures, thanks to the adoption of a stratified-charge system, with low specific consumption, equivalent to the best reciprocating diesels;
- wide multifuel possibilities;
- reduced polluting emissions;
- reduced vibrations;
- simplified cooling systems;



1100 kW "AGT 1500" Lycoming Turbine.

- very limited weight and volume;
- reduced cost.

On the other hand this type of design presents various practical and constructive difficulties in order to attain the required degree of reliability.

Namely, the following can be mentioned:

- rotor materials;
- resistance and durability of the rotor rings, especially at the indicated specific power levels;
- considerable temperature unevenness in the unit;
- excessively flat stator, that can prevent the fuel jet and the air charge from reaching an optimal interaction;
- very low torque at low engine speeds.

This type of engine has been experimented by many manufacturers, lately by Rolls-Royce in a 2-stage two-rotor diesel, but never successfully.

The only manufacturer currently on the market is the Japanese "Mazda", which has been able to profit by the Japanese substantial progress in the field of ceramics.

This has revived the attention on the rotary engine. As a matter of fact, tests made with prototypes, studies and

comparisons made by and for NASA on light-aircraft engines have led to the conclusion that the rotary engines, once they attain the necessary improvements, can offer well-grounded promises for the next decade.

In the comparison with the current-type reciprocating diesel, the supporters of the rotary engine boast about the cost, the low noisiness, the multifuel capabilities – scarce in the diesel, unless a variable ratio of compression is adopted – the facility of installation, besides the fuel economy, operating cost, volume and weight.

The current of the orthodox diesel supporters maintains, on the other hand, that the future belongs to the high feed-pressure diesel with high-efficiency turbocompressors and electronic-control, high-pressure injection systems.

Gas turbines.

After four decades of research and development, today the gas turbine for land propulsion comes forward in the field of high power as a really competitive unit for military use.

Suffice it to mention the American Main Battle Tank MTI, equipped with the Avco Lycoming AGT 1500" turbine, of 1100 kW, which compared with the most advanced diesel of the same power has positively proved itself more conforming to the desirable requirements.

The quality leap made with the "AGT 1500" can be summed up by the following data: 0.91 kW/m³; these data, in order to be compared with the correspondent data of the diesel, should be doubled, considering the absence of the cooling system. "A trump in the Army's hand" as it has been called by Caspar Weinberger, the American Secretary of Defence.

The most outstanding characteristics of the gas turbine are the following:

- comparative mechanic simplicity, due to the fact that it consists of rotating components and that the loss due to friction is low, which means high mechanical efficiency and limited wear, i.e. longer life;
- absence of vibrations at all speeds;
- practically unlimited power values within very limited weights and volumes;
- capability of generating a high torque, with the maximum values at the lowest speeds of the power shaft;
- possibility to employ transmissions with a smaller number of gears and consequent diminished stress for the clutch;
- due to the possibility to utilize a simplified power train; the power delivered being equal, the turbine transmits to the tracks a percentage of power which is sometimes 20% higher than that of the diesel;
- high braking power, as it is possible to use, besides the normal brakes, the

compressor as a braking element, by coupling it to the power shaft;

- absence of bulky, heavy and vulnerable cooling systems – fundamental on all other types of thermic engines – which reach from 50 to 100% of the weight and volume of the engines;
- noise limited to about 10-15% as compared with that of the diesel;
- low level of polluting and smoky exhaust;
- low exhaust temperature ($200 \div 300^\circ\text{C}$);
- ready start at any temperature;
- immediate availability of the normal operational temperature for the crew and for all services connected with engine and vehicle;
- relatively limited consumption of lubricating oil, equal to 1/50 of the consumption of a corresponding diesel;
- much longer intervals between complete overhauls and generally reduced maintenance needs, i.e. longer life;
- operation with various types of fuel without appreciable influence on the power delivered;
- total air consumption – considering the amount of air necessary for combustion and for cooling – equivalent to about half of that required by diesel engines.

As a consequence of the latest improvements, the "AGT 1500 A" will benefit from a reduction in the fuel consumption of 10-15%, a more accurate control system and an upgraded air-intake unit, thanks to the adoption of a less-encumbering, self-cleaning filter, which will require less maintenance.

Moreover, by fitting the gearbox parallel to the drive axle and by mounting the power plant crosswise, a reduction of dimension of approximately 30% has been achieved, with all the ensuing advantages.

In addition to the "AGT 1500 A" we should also mention the Garret Corporation's "GT 601", experimented in the US but also tested by the French and German Military Technical Corps.

This turbine, which supplies 470 kW extensible to 740, has roused interest because, unlike other turbines, is not of aeronautic derivation, but has been designed for exclusive employment in the motor-vehicle field, laying special stress on the necessity to solve, at least in part, some of the following problems, typical of the turbines:

- high specific fuel consumption, owing to the necessary limitation of the cycle's maximum temperature due to the currently available materials. In fact, in order to effectively compete with the diesel, the turbine should function with gas temperature of at least $1250 \div 1350^\circ\text{C}$ at the entrance of the rotor first staging, temperatures that can be obtained only with the employment of ceramic components, which today are available only as laboratory specimens.

Actually it can be mentioned that the last experimented turbines, manufactured by Garret and by Allison General Motors, currently being developed, with rotors and fixed components made of ceramic and first staging entrance temperatures of $1300 \div 1370^\circ\text{C}$, are capable of obtain-

ing, according to what has been stated, a specific consumption of 180 g/kW/r, constant from 20% to 100% of the delivered power.

- rapidity of acceleration, impossible to compare with the reciprocating engines save by keeping the gas generator at its maximum speed when the vehicle is not in motion, thus introducing, even if temporarily, an extra source of consumption;
- presence of large filters which make it difficult for the turbine to function immersed in water, with negative influences on the vehicle's capability to ford deep waters.
- manufacturing costs still too high because of the materials and technologies required, and because new production lines must be organized, generally completely different from those set up for conventional engines;
- last, but not last, the problem concerning the staff at all levels, who must be expert, both in management and in production/services.

The turboengines' positive characteristics, which greatly surpass the negative ones, should lead to unwavering decisions in favour of gas turbines for the military requirements in the field of high power engines. But, on the other hand, the diesel still has a remarkable potential for development, if one considers the opportunities offered by the current rapid technological evolution in the supercharging, injection and electronic control systems, in high-temperature materials, as well as in designing and manufacturing techniques; with further possibilities of development, thanks also to the new techniques of thermal insulation for the combustion chamber which will probably make it profitable to use a turbine for transforming in actual horsepower the energy "surplus" available in the exhaust gases (turbocompounding).

Hyperbar.

The supercharging system called "Hyperbar" is the first that introduces us in the family of compound engines: it has been realized in order to make the engine always work under conditions of maximum – feed pressure in order to obtain high specific powers and a ready answer in transient conditions, while maintaining the mechanical and thermal loads within the limits of conventional engines.

The system, recently applied in France on engines for military use, in Italy had already been patented in 1946. Today the French Government owns the application patents.

As can be seen in the scheme on the facing page, the system consists in the adoption of a direct connecting duct between the supercharger and the turbine – by-pass (1), with control valve – of a supplementary burner upstream the turbine (2) and a valve that cuts out the intercooler at the starting phase (5). Energy is supplied to the turbine by the exhaust gases of the engine and, in controllable proportions from practically 0 to 100%, by the

turner in which a small pilot light is kept constantly burning so as to ensure immediate ignition and, consequently, readiness of response.

In this way the operation of the turbocompressor is completely independent of the diesel's working conditions, since it can be controlled by acting on the flow of fuel to the burner. In particular, one can arrange for the compressor to work only in the maximum performance areas and have moreover high rates of supercharge in the engine's entire field of operation.

High supercharging rates, also at the lowest speeds and loads, permit drastic reduction of the engine's volumetric compression ratios (from $15 \div 17$ up to $8 \div 10$, without compromising the starting capability and the regularity of operation even at low temperatures): hence the possibility to increase the fuel supply considerably, without reaching the cycle's maximum pressures, detrimental to the engine's structural integrity.

The "Hyperbar" system, compared with the normal turbo, achieves the following advantages:

- increase of the specific horsepower;
- widening of the engine's stable field of operation;
- prompt response in transient conditions (one second from minimum to maximum speed at full load);
- possibility to influence the torque curve at low speeds.

All this, of course, presupposes, besides high-efficiency components, a system for the adjustment of the by-pass and intercooler valves – and, above all, of the flow of the fuel to the burners – capable of implementing, swiftly and precisely, the most appropriate strategies of control.

What are the negative effects?

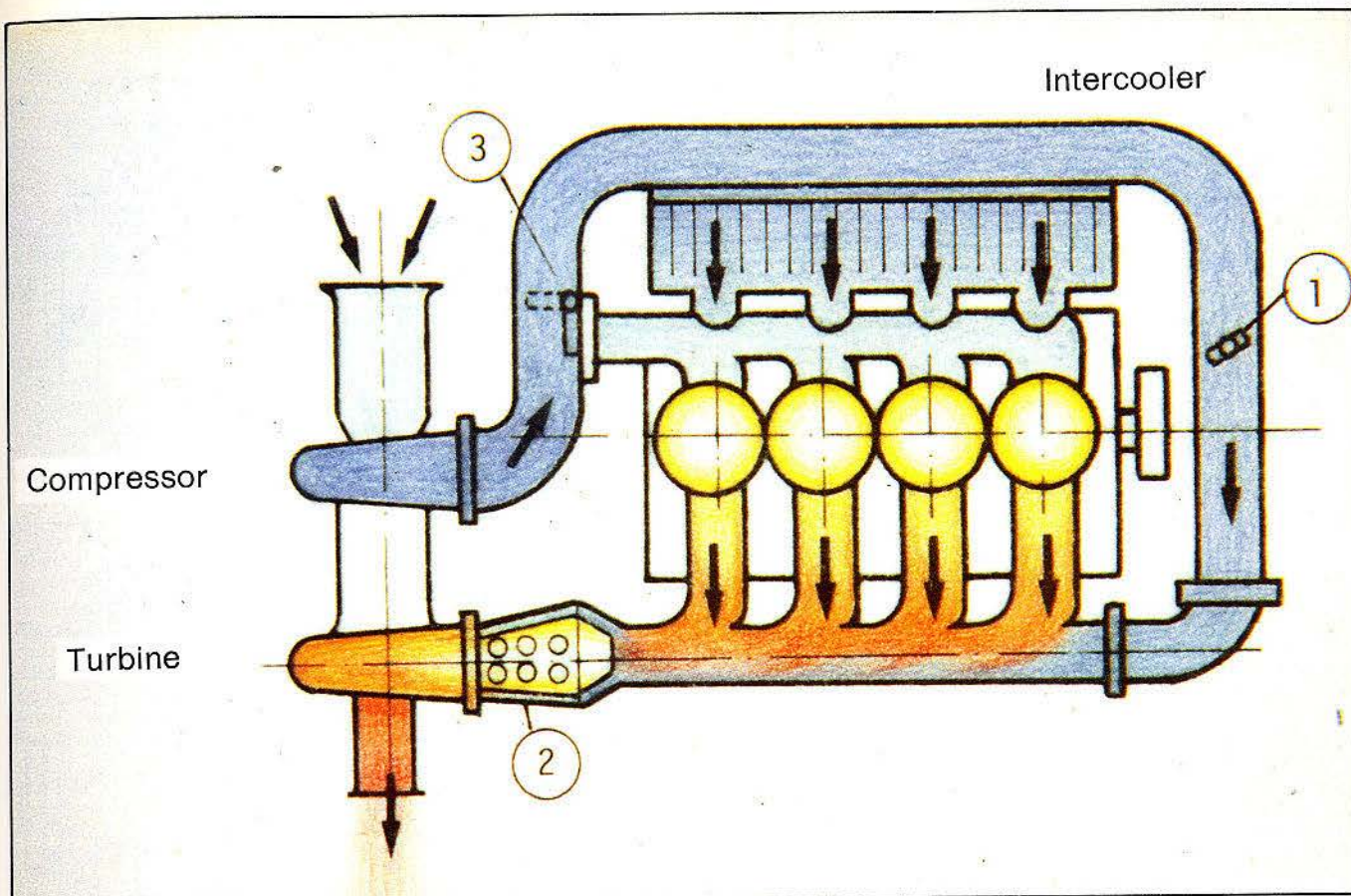
- the most evident is the increased fuel consumption over the entire field of operation, also when the burner is not working (apart from the pilot light), essentially due to the considerable reduction of the compression ratio;
- next comes the cost of the turbine and of the control elements, which raise the engine's cost notably, although this should be considered, delivered power being equal, taking into account the reduction of the cylinder capacity and therefore of the overall dimensions of the unit.

The "Hyperbar" has been adopted and is being developed on the Poyaud "V8X 1500". It has increased the engine's efficiency to 67 kW per litre, i.e. a power of 1100 kW on a capacity of only 16.47 l. Therefore, it has been possible to realize a unit with high HP values per unit of weight or volume (0.48 kW/kg and 610 kW/m³).

The "Hyperbar" system can be seen as another approach in view of enhancing, without noticeable design interventions, the basic Diesel engine's capabilities.

The turbocompound engine.

As we have seen, at the present stage of development each type of



Functional scheme of a "Hyperbar" engine.

engine has, besides characteristic deficiencies that can be offset in part with appropriate interventions, global performances not yet satisfactory and such that researchers are led to concentrate their efforts on the high percentage of power wasted during the thermodynamic process – about 65% of the total, 35% of which in the exhaust and 30% in the cooling system.

The observation of the working cycles of the various engines, Otto, Diesel, Brayton, Rankine, Stirling, etc., evidences that each engine excels the others in at least one characteristic, but all face the same problem: none of them is capable of exploiting – or can do so only in a limited way – the energy source that is supplied to them for producing mechanical power.

We are then led to ask if it could not be possible to obtain the matching of cycles having apposite but complementary characteristics.

For example, the Diesel and the Brayton cycles are complementary.

The first for its high working temperature and pressures, the second for the possibility of extreme expansion.

Among the engines currently in use, the diesel is the one that has the highest – albeit relative – efficiency. As regards the turbine – in the instance of a land-drive machine, of compara-

tively limited power – due especially to the containment of the cycle's temperature obtainable at present, the thermal efficiency cannot be compared to that of the best highly turbocharged diesels.

In order to be able to reach, in these terms, values of efficiency as high as possible, one is logically induced to try to couple the two machines, in order the first part of the cycle to be developed in the cylinders (high temperature) and the second in the turbine (wide expansion), so that they be used in the best practical conditions.

Thus the less than excellent actual efficiency of the turbine becomes more acceptable by recovering, as we said, exhaust energy that otherwise would go irremediably wasted.

In short, we seem to have a higher-efficiency operating cycle due to the prolonged expansion, which is bigger than that of the conventional engines.

This is how the concept expressed by the "turbocompound" denomination has been born. In fact the turbocompressor is not only a boosting element of the engine, but can also pour on the driving shaft the portion of power, delivered by the exhaust gas exceeding that required by the compressor.

This entails coupling the turbocompressor with the engine. One can thus roughly envisage that the reciprocating engine performs the function of a combustor which, thanks to the pistons and the crank gear, transforms the highest part of the cycle's enthalpy, which occurs at a temperature un-

acceptable to the turbine, and commits to the turbine the transformation of the lower part, thus accomplishing the compound cycle.

The mechanical coupling between the engine and the turbo can be of the infinite-gear type (see diagrams at right); the latter solution, more complicated, has the merit of maintaining the compressor precisely at the desired speed, independently of the engine's rotations and the power supplied by the low-speed exhaust gases. Thus the efficiency, power and torque of the unit are considerably increased with a resulting prompt acceleration phase.

The unit that best demonstrates this concept is the Napier Nomad 2-stroke Diesel engine (p. 54), having a maximum specific power of 72 kW/l and specific consumption of 200 g/kW/h, i.e. a thermal efficiency of 42% with a mass of 0.5 kg per kW. Despite its absolutely exceptional characteristics, this engine had no commercial development because, having been conceived for aviation, it was surpassed, as regards general characteristics, by the turbine, which is more congenial to the aircraft.

In the case of land propulsion employment, the main qualities of these solutions are very attractive and, moreover, the turbocompressor can act not only as generator of active energy but also of passive power, because the amount of braking power of the volumetric engine, due to the compressor's mechanical dragging, is increased by a notable percentage.

In short, it is a matter of using a second engine, in series to the first, also driven by the energy contained in the exhaust gases of the reciprocating engine.

For a better utilization of this energy, one can also envisage to couple the engine with a two-shaft turbine, instead of a single shaft one, connecting, in this instance, the rotor of the first stage with the compressor, and the rotor of the second stage with the drive shaft.

The result is a more flexible unit, always exerting, in whatever condition a positive action, or a negative action (braking) if one equips the free turbine stator with reversing vanes or with a controlled connection of the compressor with the drive shaft.

The scheme (facing page, top), shows the setup of the latter possibility. It consists of:

- compressor;
- 1st stage turbine;
- free turbine mechanically connected with the shaft of the volumetric engine.

The addition of a burner could moreover transform the two-shaft turbo into a second engine in series to the first.

The setup of the various complete elements appears as follows (facing page, bottom):

- 1) compressor;
- 2) 1st stage turbine;
- 3) 2nd stage free turbine;
- 4) valves switching the gas flow to the engine, to the engine plus turbines, to the turbines;
- 5) combustor;
- 6) coupling clutch of the 2nd stage rotor with the drive shaft;
- 7) intercooler.

The movement of the valve (4) permits to convey, totally or in part, the air generated by the compressor to the manifold feeding the cylinders or to the combustor. This setup permits to obtain the following positions.

Starting position.

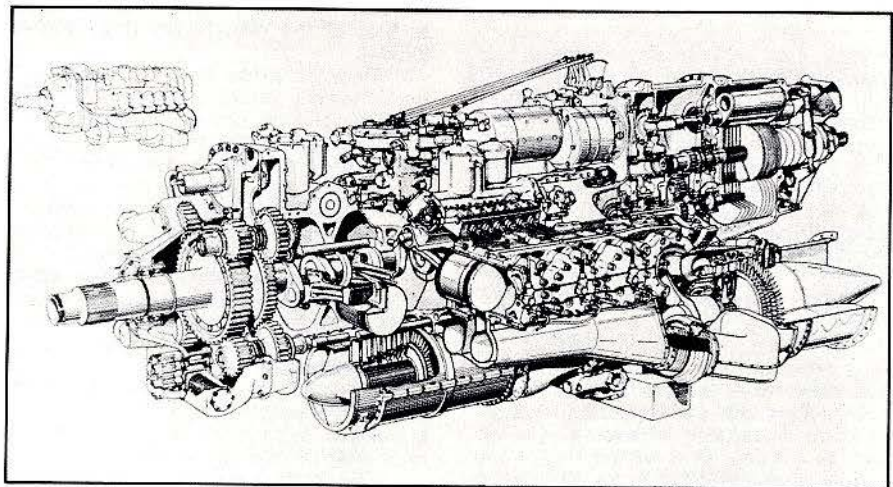
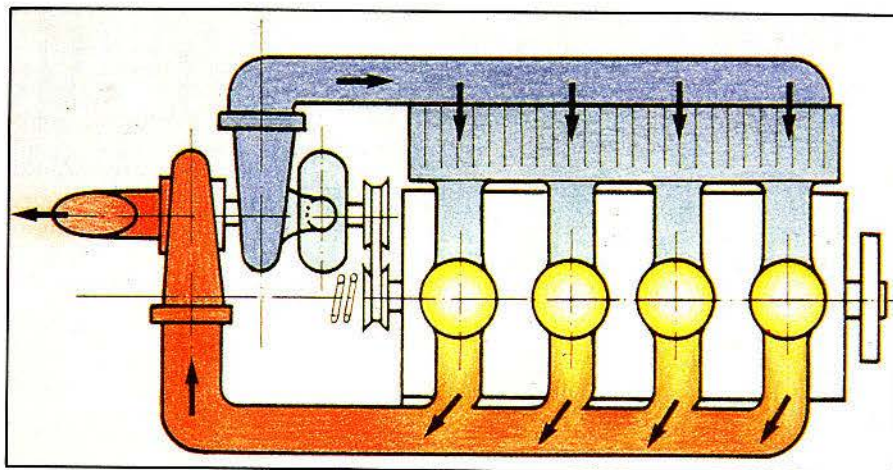
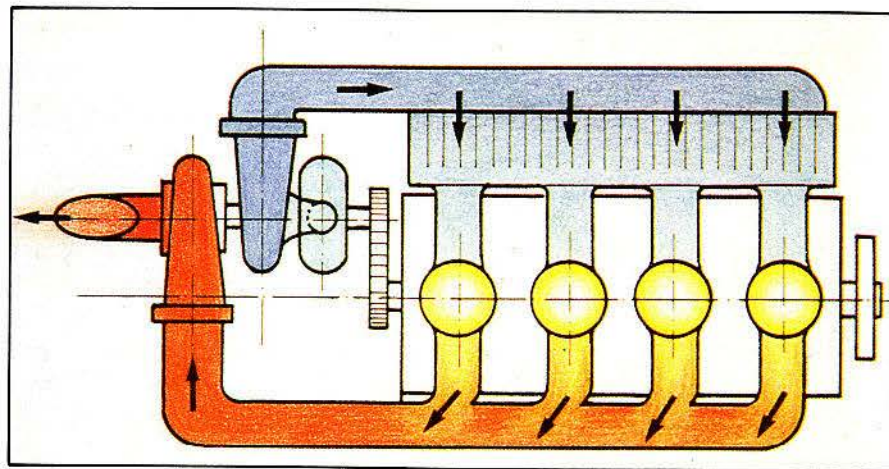
The turbocharger functions independently; the air of the compressor is conveyed to the combustor, to the 1st-stage turbine and to the 2nd-stage turbine. In this way one can obtain power and torque sufficient to set the reciprocating engine in motion. By partially or completely bypassing the intercooler, the engine can be fed with hot air also in extremely low environmental temperatures.

Normal working position at minimal specific consumption.

When the combustor is switched off, the exhaust gases feed the 1st-stage turbine and hence the 2nd-stage one. The power generated by the energy contained in the exhaust gases, minus what is used by the compressor, will be conveyed directly to the drive shaft.

Position of maximum power.

The energy supplied by the volumetric engine working at full speed



is incremented by that supplied by the combustor. The power on the drive shaft is the resultant of the delivery of the two engines – volumetric and turbine – mechanically coupled so as to make them work in parallel.

This scheme, with possible secondary variants, is all that can be imagined to increment the delivered power and maximize the engine's efficiency, optimizing the coupling between the volumetric machine (diesel engine) and the fluid dynamic machines (compressor and turbine). This, in fact,

From top.

Functional scheme of a turbocompound engine (engine-turbine coupling of the fixed type).

Functional scheme of a turbocompound engine (engine-turbine coupling of the infinite-gear type).

Napier Nomad turbocompound aircraft engine.

adds to the advantages of the compound turbine (in terms of exploitation of the energy contained in the exhaust gases, therefore of specific consumption) those of drastic power increases with simultaneous reduction of the engine's response times, typical of the "Hyperbar" system.

Nevertheless it also combines the mechanical architectural and control complexities of both systems with counterbalances in reliability, dimensions and costs.

At the present level of technology, if the "Hyperbar" system can be a short cut towards the attainment of extremely high power densities (as in the Poyaud engine) the turbocompounding technique does not seem, as yet, a close-at-hand solution for military employment, owing to the fact that the complexity/benefits ratio is still unfavourable.

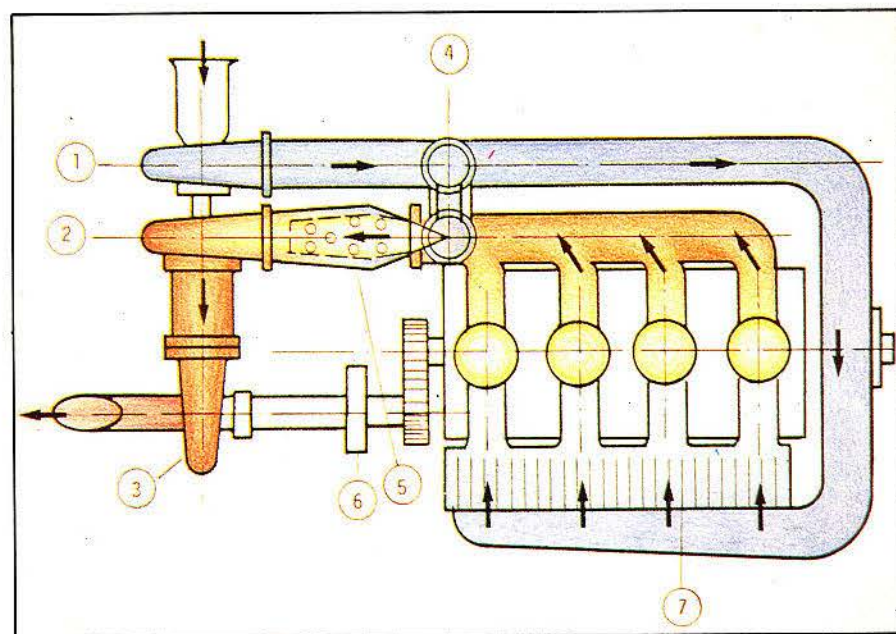
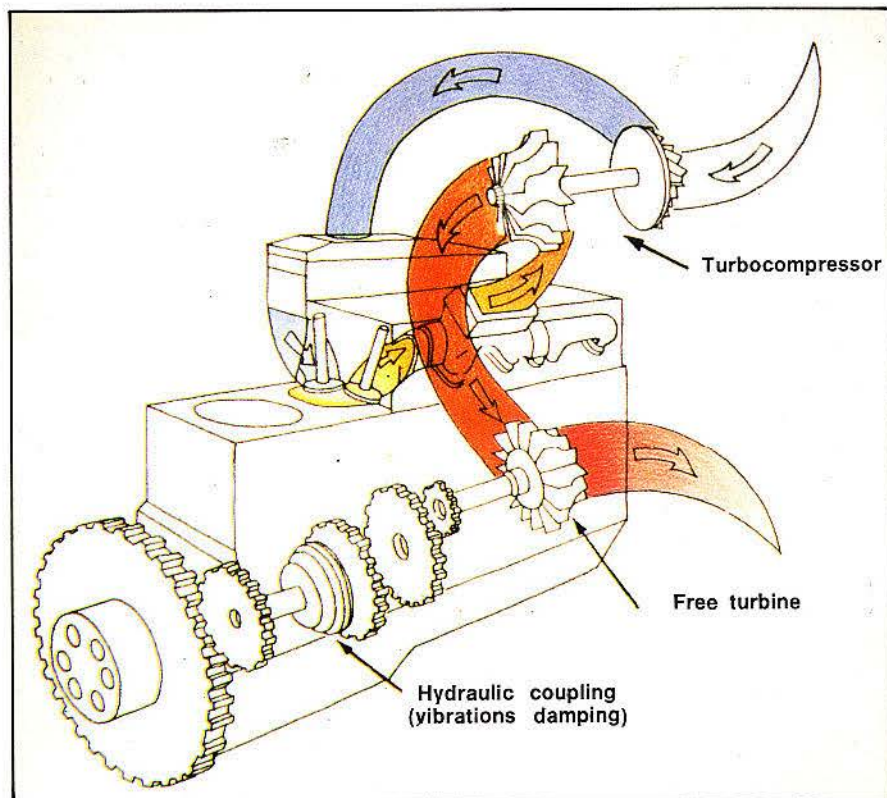
As a matter of fact, the best results obtained so far consist in power increases of 10-12%, with equal consumption, in a limited area around maximum-power conditions, which decline anyway at lower speeds and loads. If on the one hand the "turbo-compound" solution is not yet reliable enough when it is a matter of obtaining determinant increases of the engine's power, on the other it will perhaps become interesting when the engine will reach such degrees of "adiabatization" as to make available sizable increments in the energy contained in the exhaust gases.

The adiabatic engine.

In order to better understand the considerations that follow, it seems appropriate to start with a brief terminological introduction.

In thermodynamics, the term "adiabatic" defines an engine where the walls in contact with the gases that go through the cycle can neither absorb nor yield heat; i.e., they should be able to assume moment by moment and point by point the gas temperatures (i.e. be devoid of thermal capacity and perfectly insulated from the exterior). The "adiabatic" engine, in the thermo-dynamic sense, would permit a remarkable increase of the engine's internal efficiency with sizeable advantages as regards consumption. The practical realization of such an engine is nevertheless impossible to conceive. What is commonly understood with the term "adiabatic engine" is something close to the concept of "completely insulated engine", where there is no rejection of heat towards the exterior, but the walls in contact with the gases, because of their thermal capacity, assume the cycle's mean temperature, absorbing heat in the "hot" phases and yielding it in the "cold" ones.

The advent of new materials, which combine good insulating qualities and high resistance to thermic loads, and the promising developments under way, which aim at making the mechanical qualities compatible with engine applications let us foresee the realization of a "completely insulated engine".



In this case the advantages as regards the internal efficiency are scarce and very inferior to what is expected of the ideal "adiabatic engine"; moreover there are disadvantages in the engine's volumetric efficiency.

Vis-a-vis the traditional engine, the advantages remain nevertheless important. The thermic energy contained in the exhaust gases increases considerably and, up to a certain degree of insulation, can be profitably employed in the turbine of the compressor, in order to obtain higher boosting pressure.

From top.

Functional scheme of a two-shaft turbine turbocompound engine.

Functional scheme of a two-shaft turbine, independent-combustor turbocompound engine.

res with lower exhaust back-pressures, with the ensuing advantages especially as regards consumption; at higher degrees of insulation, with the application of a compound turbine downstream the compressor turbine it is possible to obtain sensible increases in power.

A further advantage is the complete elimination (or reduction) of the costly, heavy, cumbersome and vulnerable systems currently adopted for cooling, i.e. radiators, fans, water pumps and related transmissions, pipes and joints.

From a structural point of view, the possibility to technically insulate, even if only partially, the walls coming into contact with the hot gases, can produce substantial benefits, for it can reduce the strain in the underlying structures, caused by high and uneven thermal fluxes.

The basis idea of the adiabatic engine (in the sense of "completely insulated"), as we have already said, can today become a reality especially thanks to the technological advances made in the field of ceramics, particularly as concerns tenacity and expansion coefficient (approaching that of metals), besides the already well known resistance to high temperatures.

The work of technological research, which started more than a decade ago especially in the United States, Japan, Great Britain and Germany, with hefty government contributions, proceeds with results that are encouraging, albeit not yet completely resolute.

An example of this activity can be seen in the diagram above, which shows the work under way at Cummins, in a government-financed programme for the "adiabatization" of a 4-stroke diesel engine.

PROSPECTIVE EVOLUTION OF TANK ENGINES

The fundamental characteristics of the engines for the future battle tanks (late '90s), such as they have been outlined within NATO, can be summed up as follows:

- power: 1100 kW;
- engine volume: 1 m³;
- power-pack volume: 4.5 m³ (engine + transmission + air filters + cooling system).

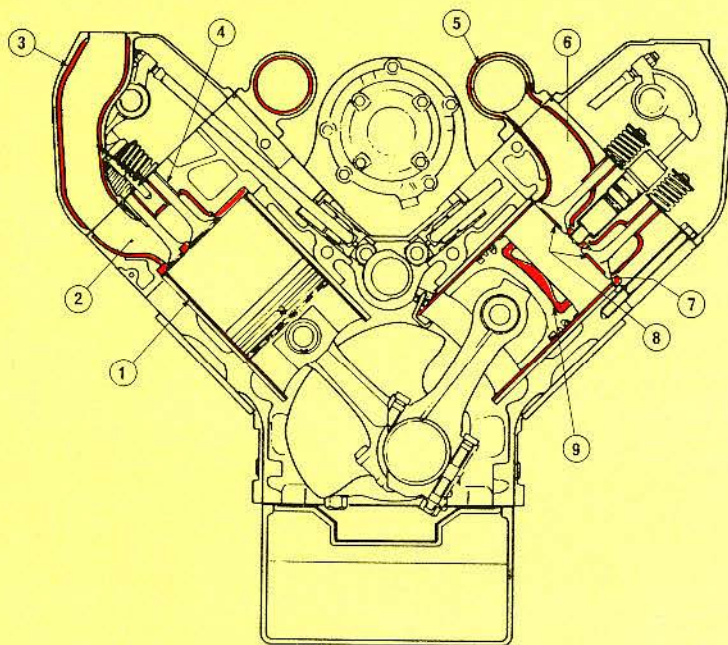
They will have to show:

- high efficiency;
- limited operational expenses;
- moderate technical development risk (1).

The turbine engine and the diesel engine stand out, with different problems, as the main competitors for this employment.

For the turbine engine, which potentially presents the best characteristics (lightness, compactness, very high specific power, etc.), to become the engine of the future there will have to be industrial-scale developments in the manufacturing technologies of the ceramic components which, hitherto only at laboratory level, have made possible for the cycle to reach maximum

"ADIABATIZATION" PROGRAMME. CUMMINS TACOM ENGINE



- 1 - Cylinder Liner with Ceramic Lining
- 2 - Intake Port with Ceramic Lining
- 3 - Intake Manifold with Ceramic Lining
- 4 - Valve Guide Ceramic
- 5 - Exhaust Manifold with Ceramic Lining

- 6 - Exhaust Port with Ceramic Lining
- 7 - Head Plate Ceramic
- 8 - Valve with Ceramic Face
- 9 - Piston with Ceramic Cap

temperatures of 1300 °C, necessary to attain consumption standards similar to the diesel's.

The problem's difficulties, mostly connected with the indispensable strict requirements of reliability, indicate that its diffusion can be deemed possible only in the long term.

For the diesel engine the problem is essentially that of substantially increasing the specific power (up to rates sensibly higher than 55 kW/l) without affecting its reliability and limited consumption.

We have seen how levels of specific power verging on the 50 kW/l have almost been reached by the most recent high-power, supercharged diesels, while with the adoption of non-conventional supercharge systems (see "Hyperbar") the limit of 55 kW/l has already been amply surpassed.

As far as the dimension requisites are concerned, most of the present engines are still rather far from the goal of over 1100 kW/m³, which nevertheless is already within reach of the engines at development stage.

As for the 2-stroke or 4-stroke type engines, it can be noticed that, at present, they have equivalent dimensions and weight qualities. The various manufacturing firms are carrying on their programmes of development on engines typical of their traditional production, i.e. 4-stroke engines for all of them except General Motors.

Prospectively, the rapid technological evolution in the field of the highly-supercharged diesel engine, spurred on moreover by fierce competi-

tion in the civilian field, confirms that there is good ground for trusting the diesel's possibilities to remain the power unit of battle tanks also in the medium term, and to keep, in the longer term, a competitive position vis-a-vis the turbine engine.

In particular, the recent developments in the area of the technologies involving the highly supercharged 4-stroke diesel:

- highly efficient supercharge systems in the field of high-ratio compressions, supercharge control systems (variable geometry, sequential turbocharging, "Hyperbar");
- electronic-control, high-pressure injection systems;
- materials and manufacturing technologies capable of ensuring high thermal-structural resistance (monolithic ceramics and/or coating, surface treatment, foundry technologies...) and the associated CAE techniques of design and experimentation;
- thermal-structural design assisted by tridimensional-calculation models;
- more sophisticated experimentation techniques for research on combustion and the local analysis of the engine's

(1) The concept of "technical development risk" has been explicitly introduced in order to ensure the availability of demonstrative prototypes by 1995 and definitive prototypes by the year 2000 for the future battle tank (Main Battle Tank 2000).

thermal-structural performance; indicate as possible, in the medium term, a rapid escalation, in terms of power density, much beyond the level of 55 kW/l.

Further increments will possibly be obtained with the already tested "Hyperbar" system and, when significant degrees of thermal insulation are reached through the adoption of the turbocompounding technique, there will also be simultaneous advantages in terms of consumption.

Finally, a substantial reduction in the amount of heat eliminated through the cooling system and an ensuing reduction of the total volume of the

power-pack (values of as much as 4.5 m³) is technically feasible through the employment of:

- more sophisticated techniques for removing heat from the structure's critical points;
- technologies for thermal insulation of the combustion chamber, based on the employment of advanced materials and ceramic coatings.

The research activity in the principal countries and major industrial groups in the field of the engines for the battle tanks of the near future is actually developing in the abovementioned directions.

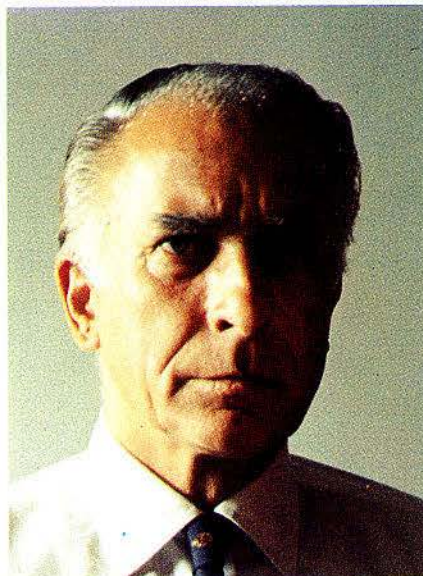
In Italy, the FIAT Research Centre, thanks to the considerable experience acquired in the development of diesel engines for automobiles and trucks, is following those lines within the programme for the realization of an Italian power unit for the battle tank of the near future (Main Battle Tank 2000).

The Ministry of Defence effectively participates in this programme through appropriate agreements with the Iveco-Fiat-Oto Melara consortium, which is charged with the development of the 2nd generation tank.

Giovanni Savonuzzi
Giuseppe Palmarini

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Dr. Giovanni Savonuzzi started his activity in 1940 with FIAT's Department of Aircraft Engine Experimentation. He has been technical manager of various companies; designer of the world-record Lesco marine engine; Chief Engineer Automotive Research and Gas Turbine R & D, with the Chrysler Corp. in the United States (from 1957 to 1969); manager of technological research with FIAT and full professor of "Engines" at the specialization course on motorization of Turin's Polytechnic (from 1969 to 1976). At present Dr. Savonuzzi is consultant with companies of the FIAT group and member of FIAT Scientific Research Committee.



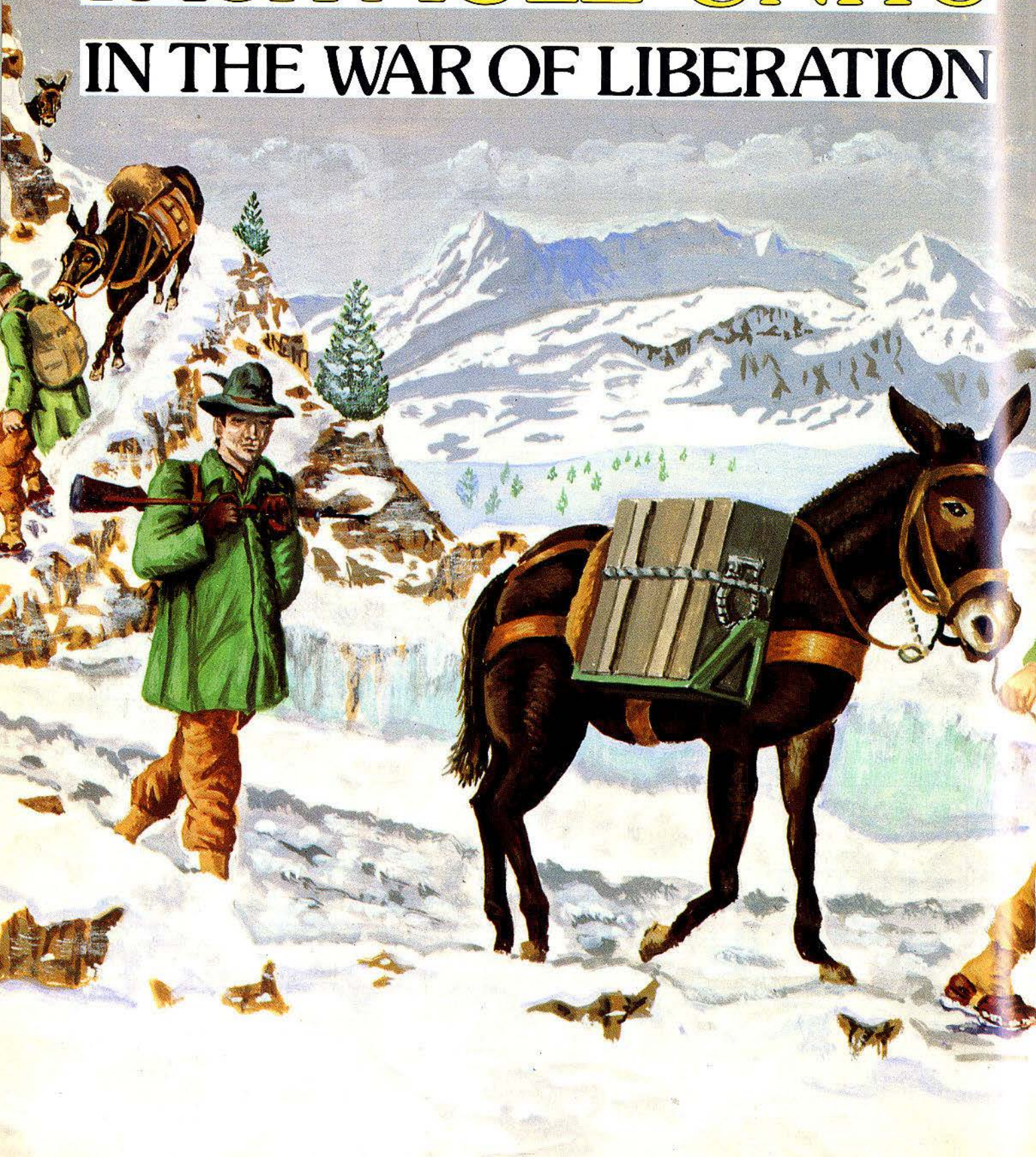
Colonel Giuseppe Palmarini, Technical Corps, holds a University degree in Physics. He has attended the Military Academy, the Application School and the Motorization Advanced Technical Course.

Col. Palmarini has carried out his activity as officer of the Technical Corps mostly at the Motorization Technical Centre, where he has been Chief of the Engine Test and Experimentation Section, and teacher of Engine Theory at the Motorization Advanced Technical Courses.

Member of various national and international work groups on fuels, lubricants and motors, Col. Palmarini is in the list of experts and researchers of the Ministry of Defence and is currently Director of the Motorization Technical Centre.

THE TANKS OF THE NINETIES WHAT PROPELLERS?

THE COMBAT PACK-MULE UNITS IN THE WAR OF LIBERATION

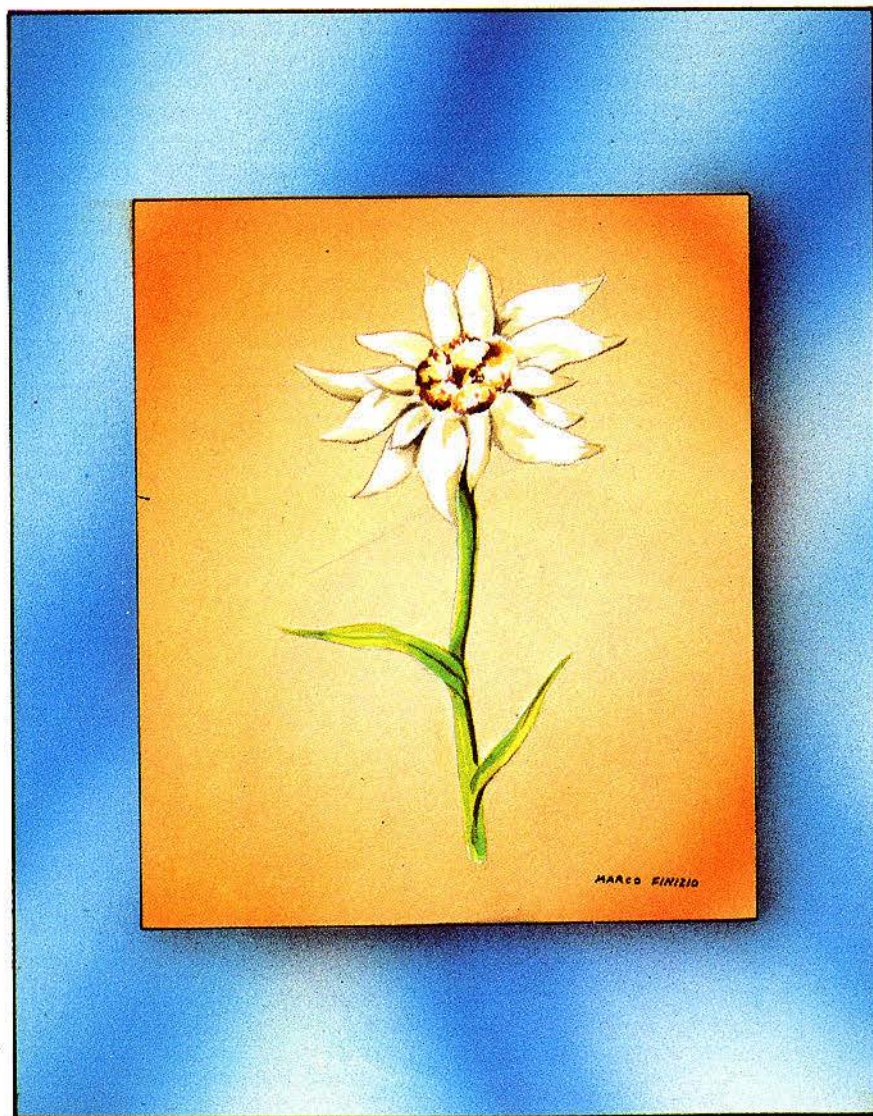


It happens sometimes that a little group, small if compared to the whole system, succeeds in influencing the work of a large organization. It occurred in England in the '50s, when the strike of the newspaper electricians paralyzed by itself the entire sector and interrupted the publication of the dailies for forty days. In other circumstances and with entirely different ends, something of the kind happened in 1944-1945 at the hand of the Italian pack-mule units during the last year of the Italian Campaign. No doubt the Allies would have won the war in any case; one may ask, nevertheless, how much heavier, in terms of time and human lives, the cost of victory would have been for the United States and Great Britain if the XV Army Group had lacked the contribution of the Italian pack-mule units. Because it was the men of those units, with their mules and their stubborn determination, who, in that month of May 1944, helped to make the operations for the battle of Rome more swift, and in the following autumn helped to overcome, on the Tuscan-Emilian Apennines, the difficulties caused by the rough ground, the lack of practicable mountain roads and the protracted, exceptionally bad weather conditions, thus creating the preconditions for the successful outcome of the final battle in the following spring.

For this reason it seems not only appropriate but also dutiful, to point out what the Allies' needs were at that time and with what tenacity the pack-mule units operated to meet them, how the Allied Commands at all levels evaluated their work and how the press of the time com-

mented on them. Having said this, there should be no doubt that the remembrance of these units on "Rivista Militare" must not be considered a colour piece but rather a way of making readers understand why these units, called simply "Salmerie" (Pack-Mule Units) until the end of September 1943, at the end of 1944, following a decision of

the War Ministry and with the concurrence of the XV Army Group Hq. were named "Salmerie da Combattimento" (Pack-Mule Combat Units). We want to establish, moreover, once and for all, that the tasks carried out by these units cannot, and must not, unjustly and inappropriately be defined "second-rate functions" (1).



Right.

The edelweiss, symbol of the Mule-Train Units.

Top.

Heading of the "Pack-Mule Page" of the 210th Division magazine.

PACK-MULE UNITS: WHY?

If, on the one hand, the existence of the Italian pack-mule units is still ignored by many at the present time, on the other, even among those who know about them, one happens to hear the question: "Why all these mules in the Italian Campaign, in a period when mechanization and motorization were already at a very advanced stage, especially in the Allied armies?". The answer is simple: there has always been, and there is today, an inclination to underestimate the Italian Apennine region, its ruggedness and the scarce practicability of its roads by wheeled and tracked vehicles. According to an American book (2): "By soldiers of great experience it has been said that the difficulties faced by George Washington's army at Valley Forge cannot be compared to those met by the Allied Divisions on the mountains of Italy"; and further on: "if it was difficult to carry the supplies up there, it was also difficult to bring back the wounded". Moreover, not only the Italian but also the Allied officers who had already gone through WWI, in more than one occasion said that the mud in France and on the

Italian front in 1915-1918 was nothing compared with that on the Apennines, during the Italian campaign 1943-1945. These are the reasons which, already in 1943, compelled the XV Army Group to solve the serious problem of sending supplies to the frontline – a problem determined by the difficulty of movement – by organizing special kinds of mountain transport which could be done only by mules.

The Allies actually had their own mule trains, but they were insufficient and inadequately trained for the hardships of the Apennine environment. On the other hand, already at the outset of the operations on the Gargliano it became clear that in the operations planned for reaching the Po Valley many units of this type would be necessary: thousands of men, thousands of mules. Units which the XV Army Group could not easily improvise, on its own and in the amount required, also considering the large number of men that would be necessary at that precise and delicate moment when the Allies intended – and had the interest – to spare as much personnel as possible in view of the operations in Normandy. The ensuing solution, which the

Anglo-Americans were compelled to choose between the end of 1943 and the beginning of 1944, was that of entrusting the constitution of these units to the Italian Army which, instead of participating in the Campaign of Liberation prevailing with operational Major Units, as Marshal Badoglio desired and had repeatedly requested and proposed, would have to supply mostly logistic Major Units (3), in some of which (4) the presence of pack-mules would be, according to the Allies' demands, particularly substantial. And so it was.

For the Anglo-Americans this solution was in line with the Quebec Memorandum (5), while for Italy, in a moment when her future seemed so uncertain, it represented a hope of obtaining from the "victors", at the end of the conflict, better armistice conditions through a mitigation of the harsh and heavy clauses of the peace treaty.

Medal of the 20th Mule-Train Group, designed by Sergio Vatteroni, a sculptor serving with the 210th Infantry Division as artillery captain.



CONSTITUTION OF THE UNITS

The Allied Commands, already in October 1943, ask the Italian Central Authorities for an ever increasing number of pack-mule units: the first request is made by the British 8th Army on October 5, 1943 (6): the establishment of the unit is carried out by the LI Corps within the "Legnano" Division, on October 18 (7). The next request follows within a few days: the constitution of the 2nd pack-mule unit, also ordered by the LI Corps, occurs on October 25th, within the "Piceno" Division (8). And then others follow: by the end of December 1943, by order to the General Staff of the Regio Esercito, another five units are set up which, unlike the first two, are establish-

ed in Sardinia. On November 27, 1943, the LI Corps, owing to the increasing number of pack-mule units and the need to train the personnel assigned to them, orders the constitution of a "Training team" on mule employment for the 5th Army" (1 Officer, 12 Alpini, 12 mules) (9). At the beginning of 1944 the units attached to the 8th Army are assembled in the 1st Mule-Train Group, those attached to the 5th Army form the 2nd Group (10), and Col. Eugenio Berni Canani, a Cavalry officer, is appointed Inspector of the Mule-Train Units, and charged with supervising all the Italian Pack-Mule units attached to the 5th and 8th Army (11).

At the end of the Italian Campaign (April 1945) the "salmerie" units reached the number of 31, with a total of

14,500 men and 11,500 mules (12). They were divided between the 20th Combat Pack-Mule Group (13) organized within the 210th Division and tasked to cooperate with the US Divisions of the 5th Army, the 21st Combat Pack-Mule unit (14) organized within the 231st Division, which had to cooperate with the British units of the 5th Army, and two more combat Pack-Mule units, the 252th and 253th (15), which, alternatively subordinate for different periods to the 209th and 228th Auxiliary Divisions, had the task to cooperate with the British 8th Army.

The 20th Combat Mule-Train Group (Table 1) at the end of the campaign represented almost one third of the forces of the 210th Division and consisted of about 6500 men and more than 4500 mules. The group was

20TH "RAGGRUPPAMENTO" COMBAT MULE-TRAIN UNITS
(Early April 1945)

Table 1

UNIT/HQ	LOCATION	ATTACHED TO (1)	COMMANDERS
"Raggruppamento" Hq	Serra di Casale (Castiglione dei Pepoli)		Cav. Col. Eugenio Berni Canani
Hq 1st Bn. 5th Unit "Montecassino" 10th Unit "Valdieri" 17th Unit "Monte Belvedere"	Pracchia (Pistoia) Cappellette Pinvisa Poggetta	10th Mountain Div. IV Corps 10th Mountain Div.	Cav. Lt. Col. Alberto Moro Arty Capt. (res.) Corrado Galli Cav. Capt. Pierluigi Cavalli Inf. Capt. (res.) Piero Gittardi
Hq 2nd Bn. 2nd Unit "Piemonte" 13th Unit "Montecuccoli" 21st Unit	Creda (Bologna) Pian di Montorio Pian di Serio S.B.V. di Sambro	1st Armd. Div. 1st Armd. Div. 5th Army	Cav. Maj. Renato Bruttini Cav. Capt. Amedeo Chiarazzo Inf. Cap. Raffaele Forasassi Cav. Cap. (res.) Achille Pannocchieschi D'Elci
Hq 3rd Bn. 1st Unit "Gennargentu" 9th Unit "Lancieri di Novara" 16th Unit "Sassoleone"	Piamaggio (Bologna) Le Pozze Piamaggio Castel d'Alpi	II Corps II Corps II Corps	Cav. Maj. (res.) Giuseppe Turrini Arty Capt. Nicola Simone Inf. Capt. (res.) Augusto Sanson
Hq 4th Bn. 12th Unit "Monte Battaglia" 18th Unit 20th Unit	Porretta Terme (Bologna) in movimento Gaggiomontano Vidiciatico	92nd Inf. Div. 1st Brazilian Div. 1st Brazilian Div.	Cav. Capt. David Misciattelli Inf. (Bersaglieri) Major Marcogallo Guerrini Arty Capt. Corrado Mercuriali Inf. Capt. (res.) Fedele Balestrieri
Hq 5th Bn. 11th Unit "Lancieri di Firenze" 15th Unit "Monterumici" 19th Unit	Morghidoro (Bologna) Le Fratte Aualta Lognola	34th Inf. Div. 34th Inf. Div. 34th Inf. Div.	Arty Capt. (res.) Gino Caporali Inf. (Alpini) Maj. (res.) Iginio De Cao Cav. Capt. (res.) Umberto Palagi Cav. Lt. (res.) Filippo Avenali Cav. Lt. Marcello Borsetti
Mule Infirmaryes 110th 130th 211th 212th	La Selva Cafaggiolo Zona Abetina Pontepetri		Maj. (vet.) Antonio De Lucia Capt. (vet.) Alberto Maurichi Capt. (vet.) Antonio Vecchione Capt. (vet.) Geraldo Palma
1st Mule-Train Tng. Battalion (2)	Cignano		

(1) All are U.S. Major Units, with the exception of the Brazilian Division.

(2) Former "Centro Addestramento Salmerie" (C.A.S.); it was a unit of the 525th Inf. Regt. "Addestramento".

21ST COMBAT MULE-TRAIN GROUP

Table 2

DATE		UNITS	ITALIAN SUBORDINATION	ALLIED SUBORDINATION
Year	Month			
1944	March	3rd - 7th - 14th (1)	210th Inf. Div. (aux.)	4th Indian Div.
1944	April	3rd - 4th - 7th - 14th	210th Inf. Div. (aux.)	78th British Div. - 8th Army
1944	May	3rd - 4th - 7th - 14th	I.F.A. HQ (4)	5th and 8th Army
1944	June	3rd - 4th - 7th - 14th	Italian Liberation Corps (C.I.L.)	5th and 8th Army
1944	July	3rd - 4th - 7th - 14th	Italian Liberation Corps (C.I.L.)	8th Army
1944	August	3rd - 4th - 7th - 14th	Italian Liberation Corps (C.I.L.)	8th Army
1944	September	3rd - 4th - 7th - 14th	Italian Liberation Corps (C.I.L.)	8th Army
1944	October	3rd - 4th - 7th - 14th - 250th (2) (3)	210th Inf. Div. (aux.)	XIII British Corps
1944	November	3rd - 4th - 7th - 14th - 250th - 786th (2)	210th Inf. Div. (aux.)	XIII British Corps
1944	December	3rd - 4th - 7th - 14th - 250th - 786th (2)	231st Div. (aux.)	XIII British Corps
1945	January	3rd - 4th - 7th - 14th - 250th - 786th	231st Div. (aux.)	XIII British Corps
1945	February	3rd - 4th - 7th - 14th - 250th - 786th	231st Div. (aux.)	XIII British Corps
1945	March	3rd - 4th - 7th - 14th - 250th - 786th	231st Div. (aux.)	British Increment 5th Army (5)
1945	April	3rd - 4th - 7th - 14th - 250th - 786th	231st Div. (aux.)	British Increment 5th Army (5)
1945	May	3rd - 4th - 7th - 14th - 250th	231st Div. (aux.)	British Increment 5th Army (5)

(1) The 14th Unit, the only one with a name, was the "Cavalleggeri Guide" Battalion.

(2) In this month the Group included also the 1st F Troop.

(3) In this month the Group included also the 479th Mountain Artillery Battery.

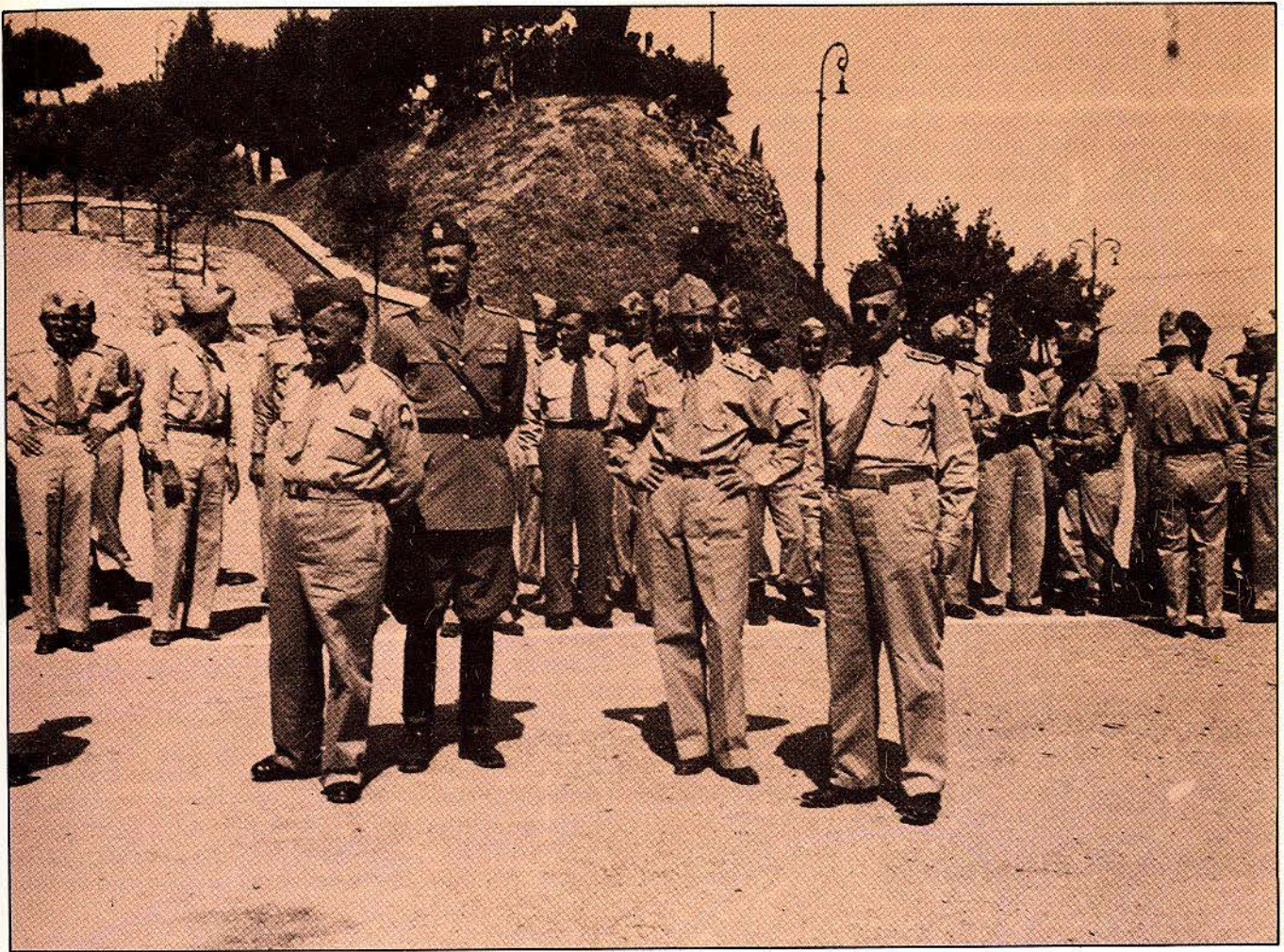
(4) Italian Forces Administrative Headquarters, later (September 1, 1944) Headquarters 228th Division (Aux).

(5) British nucleus in the Headquarters of the U.S. 5th Army, which controlled all the British units in the 5th Army.

commanded by Col. Eugenio Berni Canani, a Cavalry officer. Cavalry officers were also the Deputy Commander, Maj. Enrico Cadeddu and 70% of the Commanders of 5 battalions and 15 units, some of which bore the name of old regiments, such as "Lancieri di Firenze" and "Lancieri di Novara". Their constitution went through three distinct phases. In the first phase, corresponding to the winter 1943-1944, the first six units were established (16), albeit with some difficulties. By participating in May in the operations on the "Gustav" line, these units gave their imprint and formed the tradition of the unit that was to become the Mule-Train Group. The fact that they had been immediately given a name certainly contributed to the creation of the unit's spirit. The 1st, 2nd and 3rd were called respectively "Gennargentu",

"Piemonte", "Valdieri"; the names were derived from the places and regions of origin of most of the men of the initial groups. The 4th was called "Montecasino", first area of its front-line employment. The name of the 5th and 6th was "Lancieri di Firenze" and "Lancieri di Novara", which were their previous units. Four more units (17) were created, again with some difficulties, during the second phase, which coincides with the summer of 1944. They were given the name of a locality where a military action had taken place. The 13th was called "Montecucoli", after the site of the first battles on the "Gothic" line; the 15th "Monterumici", the name of one of the northernmost points, less than 20 km from Bologna, in the 5th Army's advance; the 16th "Sassoleone", after a place where the Santerno river flows into the plain, as a

memento of an epic day for this unit; the 12th was named "Monte Battaglia" after a height on the eastern border of the Army sector, on the watershed between the Santerno and the Senio. At that point, the 20th Mule-Train Group, which then assembled as many as ten units, was transformed (Dec. 1944) into a "Raggruppamento", in acknowledgement of its large size, and, at the same time, was given the title of "combat" unit. In the third phase five more units were set up, at the beginning of 1945, in order to lighten the task of the ten existing units, which had been enduring a lot of hardships. The constitution of these units took place in conditions much more favourable than it was the case for the preceding ones, just in time to take part in the final battle. They were distinguished only by a number (17th, 18th, 19th,



20th, 21th), apart from the 17th which took the name of "Monte Belvedere", after a place north of Lizzano (Porretta) conquered by the US 10th Mountain Division, to which the unit was attached. At the same time, in order to ease the task of the Group Headquarters which, with 15 units, had become excessively heavy, it was decided to prepare and constitute five Mule-Train Battalion Headquarters, assigning three units to each one. We must mention moreover the four mule infirmaries (110th, 130th, 211th, 212th) set up gradually since the beginning of 1944 as a consequence of the progressive increase of the pack-mule units, as well as the 11th "Pack-Mule" Training Battalion" (18).

The 21st Combat Mule-Train Group (Table 2) in April 1945 had a total strength of about 2,900 men and 2,000 mules. The

Group's Commander was Major Ugo Barbato, another Cavalry officer. The first units established were the 3rd, the 7th and the 14th, which in March 1944 formed the initial core of the group. The following April the group was joined by the 4th unit, in October by the 250th and in November by the 786th. These units, unlike those of the 20th "Raggruppamento", as far as we know were distinguished only by a number, apart from the 14th, which kept its original name of "Gruppo Cavalleggeri Guide", with Cavalry Capt. Mario Imperiali d'Afflito as Commander. In the period October-December 1944 the 21st Group included also the "F" troop (19) and in October the 479th mountain battery (20).

The 252nd and 253rd Combat Mule-Train Group, constituted respectively at Fossombrone on January 2, 1945 and at Orvieto

Cavalry Colonel Eugenio Berni Canani (hands on hips), Commander of the 20th "Raggruppamento" Mule-Train Units; on his right (wearing boots) Col. Giovanni Riario Sforza, Commander of His Majesty's Carabinieri Guards, and Col. Antonio Scaramuzza De Marco, Italian Liaison Officer with the 5th Army Hq. On Col. Berni Canani's left is Col. Balzani, Commander of the 525th Infantry Regiment.

on February 17, 1945 within the 209th Auxiliary Division, included five units each. Afterwards, on March 12, the 252nd Group was moved to Faenza, as part of the 228th Auxiliary Division, still within the orbit of the British 8th Army.

SUBORDINATION

For the pack-mule units the subordination aspect assumed

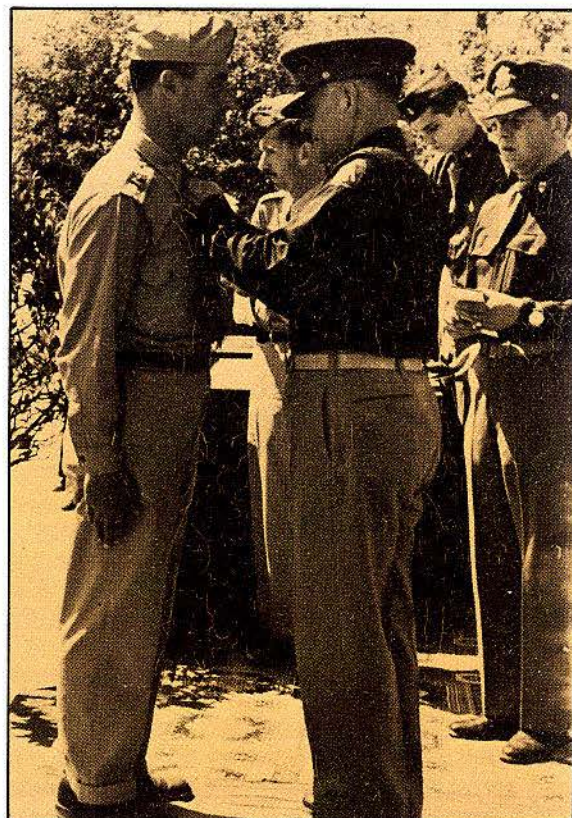
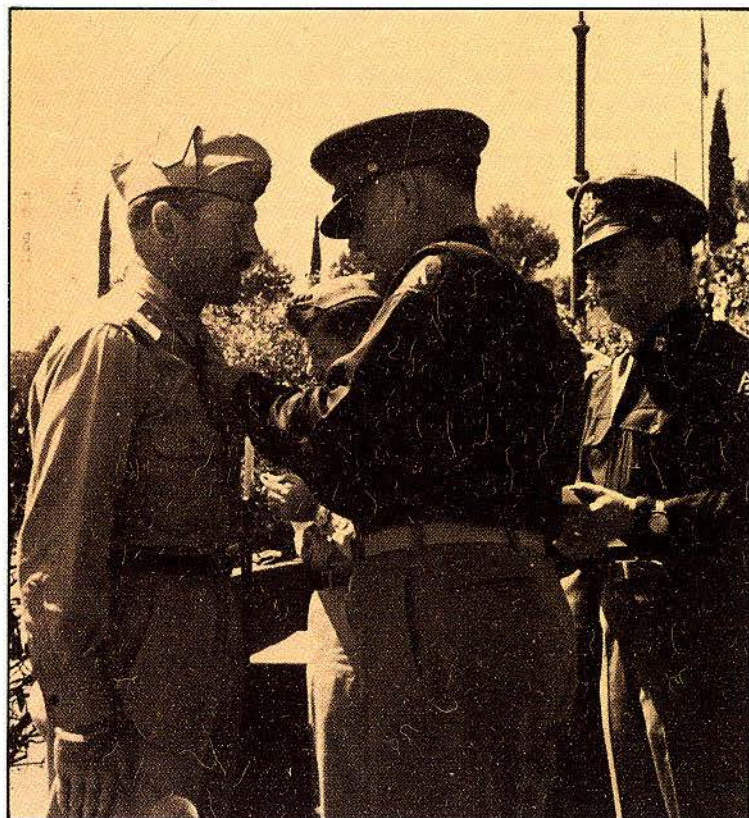
a noticeable importance. An importance which, contrary to what one may think, must not be ascribed to the more or less frequent changes of dependence (none for the units of the 20th Group, which remained always with the 210th Group and the US 5th Army: of scarce importance for the 252th and 253rd Group, which made alternate transitions between the 209th and 228th Division and remained always attached to the British 8th Army; very frequent for the 21st Group) but rather to the type of dependence. As regards the reflections on the administration of men, equipment and mules, on the action of command and on the responsibility of the Commanders, on the management of the staff and on the operational employment, it was of decisive importance for the units to belong to the US ITI category, or the BR ITI category (22). In the units of the first category, life was undoubtedly easier. The Americans, in fact, allowed a lot of freedom to the Commanders at all levels even after the constitution of the Technical

Supervision Regiment (23), while the British, through the British Liaison Units (which were called British Cadre when they concerned the pack-mule units), constantly interfered with the command action, especially at the minor levels, depriving the lower Cadres of their authority, so as to provoke, at a certain point, the spirited reaction of Maj. Barbato, commander of the 21st Group (24). The level, form and contents of the citations awarded by the British to the "Salmerie" units, compared with those awarded by the Americans can, alone, evidence the difference of system, method and attitude in the two Armies. This confirms that the remark repeatedly expressed by Maj. Nini, Chief of Staff of the 210th Division, "The assignment of the 210th (Division) to the 5th Army has been our salvation", must not be considered a wisecrack, but rather a just and pondered consideration based on the mentioned difference between the behaviour towards the Italian units shown by the Americans and the British.

EMPLOYMENT

Already since the end of 1943 the Italians had been doing their best so that the Allies could get from the pack-mule units the type of contribution they considered necessary and had insistently requested. The General Staff of the Regio Esercito had realized, already during their first employment, that the importance of these units was much greater than it could be inferred from the "auxiliary" denomination given to the services entrusted to them. In fact the Allies soon fully realized that the pack-mule unit's operativeness, their optimum performance and full reliability was gradually becoming a determinant factor in producing

Gen. Truscott, Commander of the 5th Army, awarding the Bronze Star to Infantry Capt. (res.) Augusto Sanson, Commander of the 9th Pack-Mule Unit "Lancieri di Novara" (left) and Cavalry Maj. (res.) Giuseppe Turrini, Commander of the 3rd Mule-Train Battalion (below).



that change of attitude which the Americans and English showed, albeit in different ways, day after day, with a progressive increase in understanding, confidence and esteem.

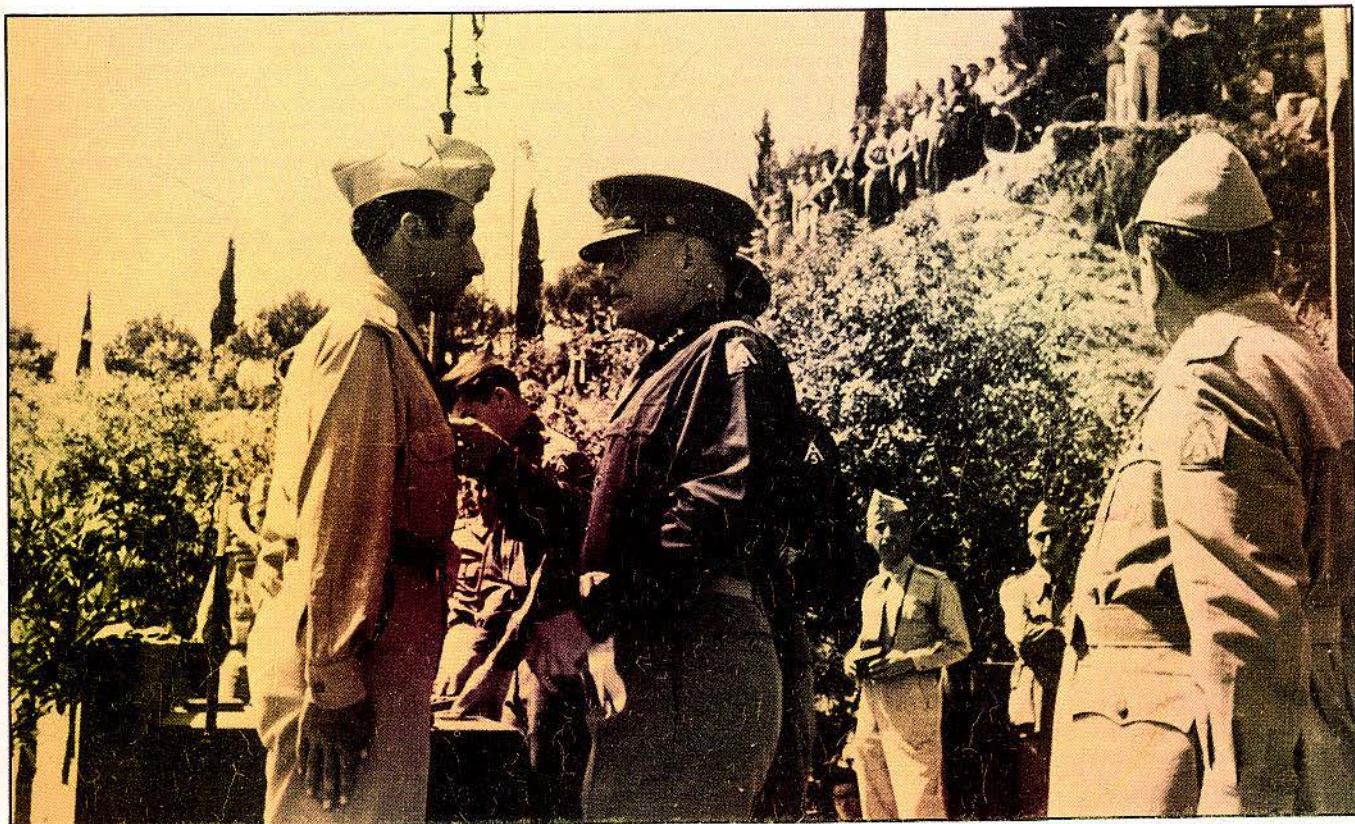
The first news about the employment of the Italian pack-mule units was sent to the General Staff of the "Regio Esercito", by the Hqs. of the 8th Army, already on December 1, 1943. It concerned, of course, the first two units, constituted in October, requested by the 8th Army and destined to the British divisions. One, organized within the 209th Auxiliary Division and attached to the British 8th Army, which had requested it for the New Zealand 2nd Division: sent for three days to the front on the Sangro river, it had three dead and eight wounded. In mid-December, still with the same division, it took care of the transport to the front of arms, ammunition and victuals in the zone of Castelfrentano, to the satisfaction of the British authorities, who proposed a citation for Lt. Di Pinto, the unit commander.

The other unit – also requested by the 8th Army and employed by the British but subordinate to the 210th Division within the 5th Army, since the British X Corps, to which it was destined, was on organic part of it – in November suffered two dead and eight wounded. On December 31, it was attached to the British 56th Division. Another unit among the first employed by the Allies as pack-mule units was the 14th "Guide" Squadron which, within the British X Corps took part in the crossing of the Garigliano, giving a substantial contribution to the positive outcome of the operation (25).

After that, as the other "salmerie" units were constituted, they were gradually employed within the two Allied Armies in the operations that led to Rome and, later on, to the "Gothic" line and the final battle. It was a remarkable undertaking. The fulfillment of the task required, day after day, resistance, perseverance, spirit of sacrifice, often reaching the extreme limits of human endurance.

The "salmerie" units worked always in the advanced areas and were essentially used for transporting food supplies, ammunition and reinforcement material to the front. The transport were carried out almost exclusively at night, sometimes along passages struck by enemy artillery, mortar and machine-gun fire. Besides accomplishing their fundamental supplying task, the units often found themselves involved in combats, sometimes capturing several prisoners. The transfers were nerly always made on foot. In this connection, suffice it to consider that the movement of almost all the pack-mule units from the Rome area to Tuscany was made by "ordinary way", i.e. on foot: the

Gen. Truscott, Commander of the 5th Army, awarding the Bronze Star to Cavalry Capt. Pierluigi Cavalli, Commander of the 10th Pack-Mule Unit.



QUOTIDIANO DEL PARTITO SOCIALISTA

Anno XLVIII - Nuova serie N. 158

La disciplina. Ecco perché, nello squallido corteggio di questi monti incombenti, tra le case distrutte, il fango, i calcinacci, e il continuato tuonar delle artiglierie, tanto ci rincorrevamo veder accorrere, e sentire sull'attenti come ad una parola, i nostri salmeristi.

Ora parla il colonnello, che è un vecchio ufficiale di cavalleria. Egli dice di essere molto affezionato ai soldati di questo reparto anche perché ebbe ad allievo, anni fa, nella scuola di equitazione, il loro capitano, dice altre cose, cose concrete, umane, senza nessuna retorica. Parla della posta, delle licenze, dei congedi per i più anziani. Parla a bassa voce, commoventemente, quasi timidamente, quasi maternamente. I soldati lo guardano fissi, e si capisce che un tipo così è quello che ci vuole per loro.

E' mirro il colonnello, di media statura, quasi calvo. Ha una sciarpa intorno al collo, annodata con involontaria eleganza. Parla con le mani intrecciate davanti al petto; sembra un prete, anzi un padre spirituale. Ed anche la sua pronuncia naturalmente raffinata, e la sua voce stanca e sommessata, hanno qualcosa che va diritto al cuore. Ma ciò che più tocca è, nell'elogio che egli rivolge ai suoi soldati, la minuta preoccupazione che questo elogio non si rifletta, comunque, su di se stesso: non dicenti, neppure un solo istante, e per una passeggera enasi del discorso, un autoelogio.

« Vi sono particolarmente affezionato perché il vostro capitano è stato mio allievo ». Fu questo l'unico accenno del colonnello alla propria persona. Come se con le mani nostre convenzionali e quasi mondane, con l'ossessione così gretamente di necessità e innadatta alle psicologie dei semplici soldati, egli volesse, appunto, esprimere pudore, separare, per sempre la propria persona dai

Per finire, il colonnello vorrebbe lodare i soldati di ciò che essi fanno per l'Italia. Ma, anche adesso, modifica e mortifica il proprio discorso: e anziché lodarli, con parole più umili e profonde li ringrazia.

Che la Provvidenza conceda molti di questi ufficiali all'esercito italiano: e l'Italia sarà salva.

Toccati, come me, e più di me, dalle parole del colonnello, furono certo anche i soldati. Perché, finì il discorso, ordinato ancora una volta l'attenti, quando venne finalmente il rompete le righe, rimasero per qualche istante muti ed immobili, come imbarazzati dai propri confusi sentimenti; e uno che stava in prima fila, uno dai capelli rossi e un gran nasone attraverso la faccia bisbetica, tirò fuori dalla tasca un fazzoletto, e, quasi per scrollare l'imbarazzo da sé e dai compagni, lo accostò alle labbra e ne trasse una rapida zulfata. Dopodiché, nascose nuovamente il fazzoletto in tasca, e non lo volle smuovere. Ma intanto tutti erano scoppiati a ridere, e fu il vero segnale di rompete le righe.

Volete, adesso che vedrete in giro molti soldati italiani vestiti tali e quali agli alleati, distinguervi da questi a colpo sicuro? Basterà che li fissiate negli occhi. Vedrete i loro occhi, solitamente mesti, accendersi, appena fissati, di orgoglio, brillare di pronta intelligenza. Gli occhi degli americani e, in genere, degli anglosassoni, popoli più giovani, ridono sempre, indifferente-mente, come lo smalto azzurro di una stoviglia. Gli occhi degli ita-

liani hanno invece l'abituale, secondo la tristezza dell'esperienza, e ogni volta, nel riso, superano questa esperienza.

Ci mischiamo ai salineristi, ascoltiamo dall'uno e dall'altro opinioni, racconti, frasi, scherzi. C'è, in tutti, un grande entusiasmo. Sono trattati bene dagli americani, sia materialmente che moralmente. E ciò li conforta non soltanto per sé; ma perché pensano che un ugual trattamento sia riservato anche alla nazione italiana.

«Ci sono molti anziani. C'è uno, un
sarto, che è sotto le armi da cin-
co anni ininterrottamente. E non
lo dice lamentandosi, ma anzi ri-
mando, come se parlasse di una bis-
zarria: qualche cosa come la cor-
tolina illustrata che arriva a des-
tinazione dopo sei o sette lustri. Non
nasconde neppure che ne « ha ba-
gliato », di tutta questa vita, e che
vorrebbe possibilmente tornare a ca-
sa, con il suo regolare congedo a
cui ha, ormai, ogni diritto. Egli na-
sconde che ci sono in giro, in Ita-
lia, moltissimi più giovani di lui, che
non sono sotto le armi. Egli non
ignora che, se volesse, potrebbe be-
nissimo tornare a casa e magari far-
vi qualche bel mercato nero. Ma pre-
ferisce fare il suo dovere. Senza
tantiarsi, e senza lamentarsi. Soltan-
to, vorrebbe, se fosse possibile, e
poiché vi ha diritto, il congedo. Eb-
bene, questa franchigia — e questo
modestia, noi la anteporremo alla
sfecundità di certi bellicosi eroi. La
patria è grata agli eroi: ma ha bi-
sogno soprattutto di cittadini che
facciano il proprio dovere. Periamo-
vi col cuspiano; e soppianto, infat-
ti, che l'anziano sarà sì è sempre
dimostrato, e continua in ogni oc-
casione a dimostrarsi, un soldato non
soltanto bravo, ma addirittura valo-
rososo.

Vediamo le stanzucce lottone,
vecchie stalle diroccate, dove sono
accuntonati i salmeristi. Per tutto,

tra le coperte e la paglia, pacchi di sigarette, gomma da masticare, scatole di carne, biscotti, tutti gli abituali rifornimenti degli americani, i nostri soldati offrono generosamente a noi, e perfino ai loro ufficiali. Accettiamo una garetta di caffè. Adesso sono loro che interrogano noi. Ci chiedono di Roma, dei partiti, della politica. Rispondiamo, parliamo. Ma a loro, e anche a noi, qui, sembrano cose lontanissime, quasi irreali. C'è il freddo, qui, il fango, questi continui colpi di cannone, e i tedeschi, che a pochi chilometri di qui strozzano i nostri fratelli.

Parlando passa il tempo; e quando usciamo dall'occezzonamento è scesa la sera. Un plotone di salmeristi, sullo spiazzo, nel fango, sta, cercando i nulli. È un plotone che ha parecchia strada da fare, per raggiungere le trincee che deve rifornire, e parte prima degli altri.

Anche noi dubitiamo parlare. Ma appena saliamo sulla jeep, ci accorgiamo che ha una gomma a terra. Conduciamo la jeep cento metri in là, a un posto americano, dove due autisti precedono subito al cambio della ruota.

In quel momento, uno scoppio, vicinissimo. Ci voltiamo: il colpo è arrivato a cento metri da noi, sulla collina che è addosso alle case. Men- tre ancora guardiamo, ne arriva un' altro, questa volta un po' più vicino.

« Sanno che questa è l'ora che ca- richiamo i miti », commenta il ca- pitano, « e cercano sempre di pie- zare qualche tiro ».

Intorno, si è fatta la vasta enorme
per incanto. Ma i soldati del pla-
tone, nel bel mezzo dello spazio,
hanno continuato il loro lavoro, co-
me se nulla fosse. E mentre assicu-
rano i basti e firano le cinghie sotto
la pancia dei muli, alzano lo sguardo
verso di noi: e ridono con gli
occhi, ridono silenziosi, affettuosi,
del nostro passeggero smarrimento.

M. S.

34. 5.

Some clippings from newspapers of that period, emblematic witness of the silent but remarkable work done by the Combat Mule-Train Units in the War of Liberation.

IL POPOLO

Per le strade della guerra d'Italia

Dove opera in silenzio l'avanguardia di un esercito che rinasce

(DAL NOSTRO INVIATO SPECIALE)

Lotta comune ed unica mèta

Infatti, anche i nostri soldati sono caduti e cadono in questa guerra che striscia maligna intorno alle loro case. Nelle città ormai lontane e dimentiche molti lo ignorano, abbacinati dai nomi stranieri di chi raggiunge e conduce la vittoria, eppure senza quei morti non ci sarebbero state queste vittorie.

Sono i reparti dei servizi ausiliari i quali sul fronte delle Armate alleate hanno combattuto una battaglia, umile e ingrata, che non conosce l'ebbrezza dell'assalto ma il duro lavoro del salmerista e dei porta-munizioni, a cui non è dato cadere fulminato su una linea ma stroncato su una mulattiera, camminando, e rimanendo lì sulla proda, mentre tien forte per il morso la sua bestia che porta da mangiare o da sparare.

Questi morti scontano con il silenzio che li avvolge le rumorose e spesso ingloriose morti nei campi passati; i nostri soldati, ogni uno stitucido continuo se ne vanno così, senza rumore, senza medaglie e senza titoli sui giornali. Volevano andare, faccia a faccia,

contro il tedesco, ma era una gioia troppo grande; bisognava scontare, soffrire, tacendo, incomprendi dai propri fratelli, dagli amici, misconosciuti.

E lì dove le agili camionette non potevano arrivare, essi sono arrivati: dove la macchina logistica di un esercito che ha bisogno di strade e vive di strade si fermava, essi non si sono fermati.

Sono andati avanti, sempre un po' scalzi e sdruciti, malandati e spesso febbricitanti, senza avere mai il cambio; conoscono tutti i sentieri della guerra, sanno tutte le gole e le cime delle montagne tra le basi avanzate e i caposaldi, arrivano sino ai pezzi che si protendono contro il nemico, portano vigore assiduo a quest'organismo articolato e nascosto tra le montagne, come un popolo misterioso di coboldi.

Ogni tanto qualcuno cade sui passaggi obbligati e cede la sua mula o, compagno che segue, e la colonna, umile e silenziosa non s'arresta; con le sue bestie chine e gli uomini fatti più tristi deve arrivare, perché la guerra non abbia sosta, perché la battaglia non rimanga priva del suo cibo.

Roma - Venerdì 18 Novembre 1944

ABBONAMENTI

Per un anno L. 250
Per un semestre L. 130
Abbonamento sostenitore L. 500
Si spedisce in abbonamento postale

L'attesa dei nuovi reparti italiani

Tra breve su questi monti arriveranno per concorrere allo sforzo supremo di liberazione i magnifici gruppi di combattimento che, perfetti di spirito e a mezzo, attendono ormai con ansia di entrare in lizza.

I fanti di queste divisioni ausiliarie aspettano con gioia (ci saranno anche i loro compagni in linea) ma anche con un po' di malinconia.

Nessuno li ricorda adesso che sono quasi soli a rappresentare la volontà di ripresa militare dell'Italia, e tanti dei loro amici più nel Mezzogiorno vivono la loro ora di stanchezza post-bellica, e tante delle loro case sono crollate con le memorie più dolci e remote, nessuno dunque adesso si occupa di essi, e domani, quando saranno venuti gli altri, non avranno più nessuna speranza di ricordo o di gratitudine.

È questo tormento si legge nel loro sguardo: questa tristezza di non essere a fondo conosciuti dal popolo per cui combattono si sente, vivendo in mezzo a loro.

FROM THE JOURNALS OF THE UNIT COMMANDERS

Before mentioning the official journals of the Commanders of the pack-mule units, here is a quotation from a private diary. It refers to the 2nd Mule Train Unit "Piemonte", consisting of men (400) and mules (300) who disembarked at Naples, coming from Sardinia, on December 1, 1943 (less than three months after the September 8 armistice). On December 9, the unit is attached to the US 5th Army. On December 12, the baptism of fire: an officer is wounded. Mules: 15 dead and 15 injured. From December 12 to January 15, 1944, uninterrupted service with the US II Corps. The diary reports: "...our service continues from the 12th of December until mid-January. First Italian 'Salmerie' unit that cooperates with the Americans for the War of Liberation. By order of the II Corps: half unit, 150 men with mules, to C.E.F. (Acquafondata). Unit at rest. After three days the II Corps requests again its employment. The men, worn out with fatigue, are dismayed. The Americans realize the facts and allow the unit to rest. The men must be replaced and reorganized. The unit receives a commendation from the American Command for the effective and difficult work done in very bad weather and with scarce and unsuitable equipment" (January 22, 1944).

The Commander of the "Gennargentu" recalls the conclusion of the manoeuvres carried out with the American divisions in the Certaldo area, in order to bring the units together. "The unit has participated in a military parade of the US 351st Infantry Regiment in the vicinity of Castagno, bearing the national flag. The enthusiasm of the men was great, because for the first time, after a long period, they saw their flag saluted by American battalions in arms, by generals and senior officers and by the civilian population watching the parade".

Most surprising is the transformation, in two weeks, of the hurriedly assembled "Montecuccoli". Clothing is insufficient, and so is the equipment. There is considerable lack of tent sheets (many men must sleep in the open) and blankets. Weapons are defective, the unit has small arms of various kinds, 130 of which are without cartridge pouches. At least 200 men lack helmets and masks. There is total lack of medicines for men and mules and we are also without horseshoes, nails and coal for shoeing. In these conditions the unit received, on September 2, the order to leave the following morning. The weather, fair until the 2nd, changes for the worse. It pours. It continues to rain also during the following days. The men must use all their energy to overcome the moral distress produced by the lack of experience and training, by the bad weather and insufficient clothing. The Section Commanders prove themselves efficient and equal to the task... The five difficult marches have been useful to the men, who are not lacking in good will and initiative and have reacquired a sufficient military

Mule-Train Group records that, until mid-November, every day there were nine or even ten units in service, which means all of them. Their losses are witness of the contribution given in those months: 428 casualties, against 519 for the entire 210th Division. Very intensive was also the work of the mule infirmaries. In eleven months, the 110th attended to 762 mules, 200 between September and November, 50% of them were injured. Larger figures are recorded for the 130th, which took care altogether of as many as 989 mules, 250 in the above-mentioned period; half of them were injured.

During the spring offensive (1945) the pack-mule units, with a great spirit of sacrifice – and also in emulation of the Allies – contributed to the positive outcome of the battle on the Apennines; there is no doubt that their contribution was determinant, considering that in just a few days the Major Units engaged in the battle succeeded in moving from the mountain

areas right into the heart of the Po Valley.

CONCLUSION

The 210th Division, during the entire campaign, suffered 260 dead, 640 wounded and 132 missing: between 90 and 95% of them belonged to the 20th Mule-Train Group. The 21st Group had a total of 57 dead, 177 wounded and 25 missing. The decorations awarded to officers, NCOs and muleteers represent a tangible acknowledgement by Italy and by the Allies. The 20th Raggruppamento was awarded 10 Silver Medals, 31 Bronze Medals, 50 Crosses for Military Valour, 35 Solemn Citations and, among the American decorations, 1 Legion of Merit and 25 Bronze Stars. The 21st Group received 7 Silver Medals, 18 Bronze Medals, 21 Crosses for Military Valour, 13 Solemn Citations and 1 Legion of Merit. Moreover, all members of the "salmerie" units were awarded the Cross for War Merit. The

posture. At Galluzzo, despite all difficulties the unit arrives in order and with a very high morale, in comparison with that at the departure. The 13th is already a fine unit. The officers feel gratified by the work done, the men are happy with the awareness of belonging to an orderly and disciplined outfit. Between Commanders and subordinates there is already a firm bond, made of mutual consideration and confidence".

"September 7 (unit attached to the 34th Division). As the Division requests ready employment, the Commander arranges that civilian farriers from the area be hired to take care of the shoeing. This measure was indispensable... The materials will follow, in successive deliveries. On the afternoon of September 8, the unit is efficient and ready to go. On September 10, the first section, on its way back from the front-line, due to a mistake of the American guides, enters a minefield. There are five casualties: 2 dead, 2 wounded, 1 missing. The section leader is knocked to the ground by the explosions. Immediate reorganization of the

section... human remains are seen on the ground; a few days later two unidentifiable corpses are recovered. Further controls have been impossible owing to the mines and the enemy's careful observation (Val di Bonella). On September 16, at Montecuccoli, a soldier of the 2nd section, on his way back from the front-line, captures 7 Germans. The unit Hqs. and the Section have all the time been encamped in an area exposed to the enemy artillery fire and strewn with mines.

Many times the Sections have been employed two, three and even four times in the same day. Several men have carried out their tasks in precarious health conditions, even when running a temperature. There have also been cases of wounded and ill men who have refused to go to hospital.

The 5th "Montecassino" was attached to the 85th Division, which was to act as a wedge inside the enemy deployment, and which, with the occupation of Passo del Giogo, was the first American unit to indent the "Gothic" line. The service required of the unit was therefore particularly

exacting because, besides the transport of supplies, it had to help with the transfer of light arms, radio stations and telephone lines along the front. "The supply lines - writes the Commander - suffer continuous losses of men and mules, especially due to mortar and automatic fire, and are so near the vanguard points that sometimes even take prisoners. It starts raining, the men must fight against a new enemy, mud, and some of them, overcome by fatigue, just give in and must be taken to hospital, thinning further the number of muleteers, so that sometimes the Commander must employ one man as driver of two mules". The Commander of the "Montecassino" is the first to point out the deficiency in number and quality of the reserves. "The scarce reserves received show an absolute lack of any military posture and technical knowledge and therefore cannot be employed right away. Moreover, as the advance of the infantry proceeds at good speed, the columns work very hard and often rest only a few hours each day, without blankets, also because the advance does not permit to recover the personal belongings left behind. October 17: a day of mourning and glory for the unit. All three columns are hit by enemy fire in a locality beyond Montecassino and, despite the fact that the echelons marched wide apart from each other, all the columns suffer heavy losses...". Despite this "...also an officer has turned muleteer, the loads have reached the companies. Column B: the Commander's action has been precious and exemplary and it is due to his serenity and contempt of danger if the column has had limited losses of mules and none of men, under about forty minutes of mortar fire. The season, the Commander of the "Montecassino" continues, "has been so inclement that everywhere the mud is deep from a minimum of 10 centimetres to a maximum of 2 metres. Often earth banks cave in, carrying with them men and mules". Thus, in three days, ten mules are lost. "The men themselves, swept away, are rescued with great difficulty and one American guide dies: the end of October sees the columns very short of men and engaged in intense service... the men are tired and only their excellent morale enables them to continue their service. At the beginning of November, all men with special duties, with few exceptions, serve as mule drivers". The weather and ground conditions are the subjects recurring most often in the journals of all units. This situation which lasts, getting worse, throughout November, does not cause a decrease in efficiency, thanks to the example constantly given by officers and NCOs and to the will of the bulk of the troops.

The Commander of the "Lancieri di Novara" writes in October "the temperature has gone down, rain and mud seriously hinder our work, severely trying the physique and morale of the men, who have worked for twenty days without a moment's rest... The circumstances have tested the men, who, apart from rare exceptions, have behaved very well, also because they



MINISTRY OF WAR

OFFICE OF THE MINISTER

N. 106840/1
136.1.116

P.M. 151 - November 20, 1944

ORDER OF THE DAY

SUBJECT: Mule-Train Units.

The Mule-Train Units, operating in fraternal cooperation with the Allied troops, have given, during a period of more than one year, a very high contribution to the operations on the Italian front. In the most impervious and difficult areas, this contribution has often been determinant for success.

Isolated units at the beginning, the Mule-Train Units are now a phalanx which with their diuturnal sacrifices of blood writes pages of pure heroism. Enemy fire, minefields, difficult terrain, rigorous weather, nothing can stop them. Silent and tireless, they always reach their destination; they have the spirit of our mountain troops.

Their contribution to victory equals that of the fighting units, and they must be considered as such, together with all the other auxiliary units which cooperate with the Allies on the advanced lines.

I express my warmest praise to officers and other ranks.

THE MINISTER
A. CASATI

have been encouraged and commanded by officers and NCOs who always, with their exemplary behaviour, have been able to obtain the highest performance from their subordinates".

"Despite the serious deficiencies in personnel (the Sections have an average of 55 men instead of 84) another shortcoming is the lack of clothing... The torrential and persistent rains compel the men to wear wet and muddy clothes, with scarce possibilities to get them dry, because the area presents considerable destructions of the few existing houses, and therefore scarce possibilities to find shelter".

At the beginning of October there is mention of a column hit by artillery fire during the night.

There are three dead and four wounded, plus 119 mules dead and injured. Conclusion: "Nevertheless the supplies to the line arrive regularly, also that night".

Some notes of the Commander of the "Piemonte": "In September we are employed in supplying the line and in the recovery of corpses. The work has been particularly hard due to the inclement weather, the pace of the operations and the impracticability of the mountains... In all of the actions of our soldiers the spark of compassion and kindness has still been shining... From November 1 to November 8, the last days on the San Clemente front, destiny seems to be obstinately against our unit: fire, water and mud give no respite. Within a very short time an officer is hurried to the hospital for illness and exhaustion; another officer, severely wounded, dies two days later (Cavalry Lt. Della Rocca), eight soldiers are wounded, eleven mules dead or injured. The men have reached 55 days on the front, they bear on their faces and bodies the marks of stoically endured hardships".

The notes of the "Valdieri" in the period considered let us realize the difficulties that the unit had to confront, owing to its very particular conditions of employment. "Not always the effort to which the men were subjected, owing to the bad weather conditions, has been rewarded by some units of the South African Division by satisfying their more urgent needs, especially as regards food; despite interventions of the officers of the unit, it has not been sufficiently improved. All the same, the men's performance has been constantly excellent, even in the most difficult conditions".

In November the tasks carried out by the unit are stated more precisely: "uninterrupted service, despite the fact that a pause in the advance and the defensive deployment of the Allied units have allowed ten of the twelve sections attached to the 61st South African Division to enjoy a turn of 7 days of well deserved rest... the squads attached to the 1st Brazilian Division and to the 92nd Division and two squads of the 6th Division have been allowed no rest in their continuous service, which has been lasting, uninterrupted, for 80 days". The Commander of the "Lancieri di Firenze", the last of the units constituted before the May offensive and sent to the front before the com-

pletion of its formation, writes: "...May 24, 3 a.m.; air attack, 40 minutes: 1 dead and 3 wounded. On the whole, the behaviour of the unit has been in substance satisfactory, despite the initial faults due to lack of training, high percentage of new recruits and hasty employment... From the formal point of view some work remains to be done... To take the unit in hand and do away with some deficiencies of organization, in order to bring the unit back to the line with greater solidity. The employment requested by the Americans was not always rational, perhaps as a consequence of the war actions with continuous shiftings of the front... The requests of mule trains have not taken into account the structure of the unit and compelled us to split a squad into smaller groups, creating difficulties of command and control for the officers, who had always been with their men...".

On July 8, near Castellina Marittima, the unit which operated with a regiment of the 34th Division was hit by a violent bombing which caused 2 dead and 6 wounded. Here is how the death of two muleteers, artillerymen Annibale Bellotti and Ivo Marzolla, is described: "firm under the fire of the enemy artillery, they did not leave their mules and their precious load and kept on inciting their teammates to do their duty, until a volley hit them to death, together with their mules, whose bridles they still clutched in their hands...". "The service continues - the report goes on - and succeeds in taking all the mules uninjured to their destination".

Three days later, during the night between the 11th and 12th, clash between a squad and a German patrol: "our soldiers have reacted effectively despite the inferiority of their weapons, and the German patrol retreats leaving one dead behind; it has been impossible to ascertain the number of the wounded...". It is interesting how the dead soldier was successively identified. A member of the squad had disappeared; five days later he was found dead behind a bush, still holding his rifle; two rounds were missing and one was still in the barrel. Next to him was another dead man, and this was German. The muleteer was awarded a Bronze Medal "in memoriam". In the month of October the figures regarding the services carried out by the "Lancieri di Firenze" are the following: "average number of mules employed daily: 190; during the whole month: 5,980. Loads transported: 450 t. During the return journeys: transport of corpses". The unit's commander also remarks a fact which induces some bitter considerations. "Thanks to two lorries supplied by the Hqs. of the 91st Division the unit command can provide a hot meal each day...". "Several times the Hqs. of the 337th and the Battalion Hqs. show their gratitude with tangible signs, by distributing to the Sections on the front clothes, extra rations and cigarettes". In November the journal reports a very deep-felt consideration. After mentioning the losses of the 7th-8th and 9th November (2 dead, 16 wounded among the men and 27 mules lost) the Commander continues: "when one thinks that within the unit there are many men from

senior contingents (1914 and 1915) returning from long years of service in coastal zones dominated by malaria, and from other fronts, with their health generally undermined, who with a spirit of pride (perhaps not even realized by them, but so evident in their work and in their simple but frank words) have managed to overcome both the physical fatigue and the moral tiredness deriving from the fact that they come from still occupied territories and therefore for over a year have been ignoring the fate of their families, we must say that as far as valour and sacrifice are concerned the muleteers, 'salmeristi', have given brilliant and lasting proof. Unfortunately it is impossible to recount everything...".

WHAT THE ALLIES SAID

THE AMERICANS

"I desire to commend you, your officers, and enlisted men for the splendid manner in which they have performed their duties in recent operations of II Corps. Since 9 December 1943 your unit has been actively engaged in the movements of essential supplies to front line fighting troops of this command. Through inclement weather, over difficult, mountainous terrain, the officers and men of your organization have exerted themselves to the utmost to deliver these supplies with efficiency and dispatch.

Your cooperation has been a vital contributing factor in the steady advance of our troops toward their objectives, and is specially gratifying as an example of the unity of purpose and determination that animate the officers and men of your forces.

It is my wish that the contents of this message be brought to the attention of all personnel of your command".

(From Gen. Geoffrey Keys, Commander of the U.S. II Corps, to Cavalry Captain Amedeo Chiarazzo, Commander of the 2nd Pack-Mule unit "Piemonte").

January 22, 1944

"During our last period of operations in the Terracina sector, our advance would have been impossible or greatly impeded had not food, water, and ammunition been gotten to our 3rd battalion, then operating in the hills. The rugged terrain made it impossible for motor vehicles to carry these supplies, nor could we spare manpower to do the job. It was then that the mule train came to our assistance and enabled us to complete our mission and force the enemy to retreat to the north.

I wish to commend your Group and especially the platoon commanded by 2nd Lt. Forziati... Hope that you may be working with us again in the near future".

(From Maj. H.C. Triesler jr., U.S. 337th Infantry Regiment, to Artillery Captain Corrado Galli, Commander of the 5th Pack-Mule unit "Montecassino").

June 6, 1944

"On 15 September 1944, the First Italian Mule-Pack Company, under your command, was attached to this regiment, to assist in supplying our troops through the difficult and mountainous terrain. This regiment began its drive through the Gothic Line, from Mt. Altuzzo, in the vicinity of Scarperia, Italy, and continued on through Firenzuola, Sambuco, Quinzano, and Mt. Formiche. You and the officers and men of the First Pack-Mule Company have demonstrated unquestionable devotion to duty and have worked untiringly in overcoming unsurmountable obstacles in supplying this regiment during this long and difficult march. For extended periods of time most of the supply trails in this regiment's sector were inaccessible to vehicles due to the extreme mountainous nature of the terrain and also because of heavy rains which made roads impassable. It was then that your services proved invaluable in supplying, by mule-trains, ammunition, rations and water to our front line troops. The victories we have realized during this operation were without question greatly aided by the tireless efforts of you and your men. In operations which are yet to come, before final victory is achieved, I sincerely hope that the First Mule-Pack Company under your command be assigned to support this regiment".

(From Col. W.H. Mikkelsen, Commander of the U.S. 338th Infantry Regiment, to Artillery Captain Nicola Simone, Commander of the 1st Pack-Mule unit "Gennargentu").

November 8, 1944

"Since your unit has been attached to the Division I have received excellent reports from the Regiment commanders and my Staff on your effectual cooperation and on the manner in which your unit has accomplished its duties. I would like to have the opportunity to meet all your men soon and to commend them personally".

(From Gen. W.C. Livesay, Commander of the U.S. 91st Infantry Division to Cavalry Captain Umberto Palagi, Commander of the 11th Pack-Mule unit "Lancieri di Firenze").

November 12, 1944

"During the whole period from September 15 to November 22, 1944 this Division has profited greatly by the service of your Pack-Mule unit. The terrain which had to be crossed in the well-known weather conditions has magnified the problem of supplies. To carry out our task, it was necessary to cross mountainous terrain and the bulk of the supplies had to be carried by pack-mules, due to the lack of roads of any kind.

Furthermore, due to the heavy rains which worsened the conditions of the mountain mule-tracks, it was necessary to spend hours of exhausting and dangerous work to supply our advanced troops. Your men have contributed to our success and enabled us to continue the offensive: it is therefore a great pleasure for me to commend you and your men for their spontaneous col-

laboration. May your participation be recognized as a determinant element for the liberation of your land".

(From Gen. Coulter, Commander of the U.S. 85th Infantry Division, to Artillery Captain Corrado Galli, Commander of the Pack-Mule unit "Montecassino").

November 28, 1944

"I want to commend you and your unit for the outstanding collaboration extended to this Division during the just concluded period of operations. The sacrifices of your unit have contributed greatly to the success of the operations".

(From Gen. Coulter, Commander of the U.S. 85th Infantry Division, to Artillery Captain Corrado Galli, Commander of the Pack-Mule unit "Montecassino").

"Gentlemen, I want to express to you my appreciation for the magnificent work done by your officers and mule-teers last month, when your unit has been attached to my Regiment. They have performed their duty very well, although their task was very heavy and had to be carried out in very bad conditions of weather and terrain. It has been a real pleasure to have you with us".

(From Lt. Col. M.P. Comprie, Commander of the 1st Royal Carabineers Regiment of the South African Division, to Cavalry Captain Enzo Antonelli Incalzi, Commander of the 10th Pack-Mule unit "Valdieri").

November 28, 1944

"The performance of your duty, your courtesy, your military discipline and the spirit of your unit have always been excellent. The behaviour of your unit is worthy of the good traditions of all the Allied armies, an example of service, courage and conduct. On behalf of the 10th Mountain Division, I thank you for a job well done".

(From Gen. G.P. Hays, Commander of the 10th Mountain Infantry Division, to Artillery Captain Corrado Galli, Commander of the 5th Pack-Mule unit "Montecassino").

April 30, 1945

"In the final attack to break through the Apennines your help, through the enemy minefields, has enabled our 87th Infantry Regiment to keep the enemy constantly under pressure in his sector, until his resistance was overcome and we all succeeded in entering the Po Valley.

On behalf of the 10th Mountain Infantry Division, I want to thank you, your officers and your soldiers for the excellent manner in which they have accomplished the duties assigned to them, helping us to defeat our common enemy".

(From Gen. G.P. Hays, Commander of the 10th Mountain Infantry Division, to Infantry Captain Pietro Gittardi, Commander of the 17th Pack-Mule unit "Monte Belvedere").

"The long activity of the 20th Mule-Train Group, successful despite all the present difficulties, deserves our constant admiration and appreciation".

(By order of Gen. L. Truscott, Commander of the 5th Army, to the Headquarters of the 210th Infantry Division IT).

December 24, 1944

"I want to express my appreciation for the excellent services rendered by the Mule-Train units which, under your command, have been attached to my Division. The high skill of the officers, the evident sense of duty of the men, the effectual work done, have been a great help to this Division. I should be grateful if you would extend my appreciation to Capt. Simoni, Capt. Sanson, Capt. Forasassi and Capt. Misciatelli".

(From the Commander of the U.S. 34th Division to Cavalry Colonel Eugenio Berni Canani, Commander of the 20th "Raggruppamento" Combat Mule-Train Units).

March 15, 1945

THE BRITISH

"On this last day of your precious and indispensable work with our unit - the 1st Guard Brigade - the Commanding Brigadier has asked me to express his feelings to you. It is therefore with great pleasure and pride, since I am Italian too, that I convey to you all his satisfaction, his praise and his most heartfelt appreciation for the spirit of sacrifice, the promptness and the skill shown in the performance of your duty in these days of collaboration, taking into account, in particular, the not very easy conditions in which you have had to work. I can assure you that these words are not purely conventional expressions: they sincerely reflect the deep admiration you have excited in the Brigadier, who, albeit not directly, has been following you very closely in this particular period, when your continuous work, carried out in order to provide us timely with supplies, was made exceptionally hard by the unceasing bad weather. The Brigadier wants also to remember your Commander, who unfortunately fell last night, and wishes to express to you his sincere regret and deep sorrow.

The inevitable sacrifice of these humble and brave Italians, made for the common cause which has finally brought us together again, will serve to strengthen the friendship and the consideration of the British people, from whom, unfortunately and not due to our fault, we had been separated in these last years. With all my friendship and best wishes".

(From Lt. Giorgiotti Utermann, Italian Liaison Officer, on behalf of the Commander of the 1st Guard Brigade, Brig. H. Montague Douglas Scott, to Maj. Ugo Barbato, Commander of the 1st Combat Mule-Train Group).

October 12, 1944

units were defined as "combat" units; the troops wore a badge representing an edelweiss encircled by a horseshoe.

More evidence to help us understand the pack-mule units – what they did, in what conditions they operated, especially at the beginning, the extent and weight of their contribution – can be found in the historical journals of the Commanders of the units, in the citations and acknowledgements received from the Allied Commanders, and in the space devoted to them in the press of the time.

To conclude these comments, nothing is more appropriate than the Dispatch of

November 20, 1944 addressed to the Armed Forces by the Minister of War of the time, which well defines the pack-mule units and sums up appropriately their determinant contribution during the entire campaign. In the words of Alessandro Casati, Minister of War: "The "salmerie" units, operating in fraternal cooperation with the Allied troops, have given, during a period of more than one year, a very high contribution to the operations on the Italian front. Isolated units at the beginning, the Mule-Train Units are now a phalanx which, with its diuturnal sacrifices of blood, writes pages of pure heroism

Their contribution to victory equals that of the fighting troops".

Experts of the War of Liberation said then, and still say at present, that within the framework of the operations in Europe, the Italian pack-mule units, together with the other auxiliary units (200,000 men), shortened the duration of the war by at least six months. Here one is instinctively led to ask: what would be Europe today if the advance from the East had continued for another six months?".

Brig. Gen. Enrico Boscardi

NOTES

(1) Article "L'Esercito Italiano nella Guerra di Liberazione" by Luciano Lollo, from the volume *La Guerra di Liberazione. Scritti nel Trentennale*, Ufficio Storico SME, 1979, p. 145.

(2) From the volume "The Fighting 36th. A Pictorial History of the Texas Division in Combat", published by "The 36th Division Association, Austin, Texas", 1945, p. 32-33.

(3) Article "The Auxiliary Units in the War of Liberation", by Enrico Boscardi, *Rivista Militare*, no. 5/86, p. 61-62.

(4) Of the existing eight Auxiliary Divisions (205th, 209th, 210th, 227th, 228th, 230th, 231th and It. Hq. 212th) only four had Pack-Mule units: the 209th, 210th, 228th and 231th.

(5) The Memorandum (August 15, 1943) stated that the armistice conditions could be changed in Italy's favour in proportion with the contribution given by the Italian government and people to the Allies, against Germany, during the remaining period of war.

(6) These were 250 mules, with harness and relevant personnel (officers, NCOs and muleteers) destined to the Allies (British) in the Foggia area.

(7) 5 officers, 11 NCOs, 318 privates and 233 mules.

(8) The unit, consisting of 7 officers, 309 NCOs and privates and 233 mules, left on November 13th for San Severo di Puglia and then proceeded to the front line.

(9) Later on it will be called "Centro Addestramento Salmerie" (Mule-Train Tng. Center).

(10) The 1st and 2nd Mule-Train Groups will become respectively the 21st and 20th Mule-Train Group.

(11) He held this office until the end of 1944, when was appointed Commander of the 20th Mule-Train Combat Group.

(12) Each unit consisted of about 450 men, 12 saddle horses, 370 mules and, as a rule, could satisfy the needs of a stationary division; on an offensive,

two units per division were sometimes necessary. Besides the Commander, the other officers were: the deputy Commander, the section or platoon leaders, a quartermaster office, a doctor, a veterinary and a chaplain.

(13) Formerly 20th Mule-Train Group (5 battalions, for a total of 15 units).

(14) With six units.

(15) Each with five units.

(16) Despite the laborious start of the 2nd unit and the disorderly birth of the 9th and 11th, the command action of six first-rate officers, three of whom from the reserve – Maj. Turrini, former Commander of the "Lancieri di Novara", Artillery Captains Simone and Galli, Cavalry Captains Chiarazzo and Palagi and Lieutenant (later Captain) Sanson, an Infantry officer – was a determinant factor for the good conduct of the men.

(17) On the constitution of these units and at the beginning of their employment, Maj. Turrini who, although he had not yet been appointed battalion Commander, superintended all the Pack-Mule units stationed in the Santeramo Valley, gave a remarkable contribution, with his action and his personal prestige, to overcome that period of crisis, which concerned particularly the 12th and the 16th, which later on received repeated and well deserved praise from the Allied commanders, in recognition of their good performance.

(18) The Battalion had the task to train the newly arrived personnel destined to the Pack-Mule units attached to the 5th Army, and was part of the 525th Infantry Regiment "Addestramento" (Training). In the first months of 1945, it had replaced and taken over the tasks of the Mule-Train Tng. Center constituted in 1944 (Locations: Cecina, Bagni di Casciana, Cignano) starting from the small unit constituted on November 27, 1943.

(19) Paratroop Group of the 185th "Nembo" Regiment, stationed in southern Italy, which on the day of the armistice of September 1943 gathered around Cavalry Capt. Carlo Francesco Gay, of the same regiment, and started to fight

against the Germans. Attached to the Canadian 1st Division in October 1943, the unit was transferred to the British XIII Corps. Initially (December 1943) the Group took the name of "I Reparto Speciale Autonomo" and later (March 1944) that of "F Reconnaissance Troop". From Puglia to Emilia it carried out important exploration, information and combat tasks.

(20) The 479th Mountain Battery was the Italian unit of the 7th British Mountain Artillery Regiment. The battery arrived in the operation zone in June 1944, was organized within the British unit and took part in all its activities, performing tasks similar to those of a Pack-Mule unit. It suffered considerable losses in dead, wounded and missing.

(21) On this date, at Fossombrone, the "Centro Addestramento Salmerie" (CAS) was constituted, similar to the one of the 5th Army. The Centre was charged with the training of all personnel of the Mule-Train units of the British 8th Army.

(22) Article "The Auxiliary Units in the War of Liberation" by Enrico Boscardi, *"Rivista Militare"*, no. 5/86, p. 62, table B, note (1).

(23) The U.S. *Technical Supervision Regiment* (TSR) and the *British Liaison Units* (BLU) were Allied units working with the Italian units, officially established at the beginning of 1944 by order of the XV Army Group Headquarters (Gen. Alexander). Their tasks consisted in cooperation, surveillance and control (training, liaison, technical assistance).

(24) See "Il Tempo", January 3, 1985. Article by Enrico Boscardi "Difficult Relations with the Allies. The Campaign of Liberation with the Americans and the British".

(25) The "Guide" Battalion on September 8 was part of the 114th Coast Regiment. It was supposed to contribute to the constitution of the rapid reconnaissance battalion of the 51st Corps, but the order was cancelled. In January the "Guide" became part of the 514th Infantry Regiment and in March constituted the initial nucleus of the 21st Mule-Train Group.

JACQUES COURTOIS Il Borgognone

Painter of battles



"Il Borgognone" was a lively interpreter of the battles fought during his lifetime as well as of the great biblical battles. He has left even in his self-portrait the mark of his passionate devotion to this artistic subject.

Jacques Courtois (Saint-Hippolyte, France, 1621-Rome, 1676), called "*Il Borgognone*", had painting in his blood: his father was a painter of icons. He was then initiated into the painting of sacred subjects but his destiny soon brought him away from his father's school as he moved to Italy and set himself under the protection of a man-at-arms.

From then, the barely adolescent Jacques discovered his real interest, and the subject of his art, a subject from which he drew, with amazing accuracy and constancy, the fuel for his future inspiration: battles.

Courtois would actually reinterpret – through his whole career – that theme in a thousand variants, with the passionate enthusiasm which always remains the real characteristic of his personality.

Il Borgognone was a man of action, of strong feelings, of "full-blooded temper", as his biographers usually describe him. Indeed, the impression of such an ardent nature is imprinted in every choice, every act, moment or feeling of his life: from the passionate love for his wife, Maria Vaiani, to the absolute devotion to ascetic life in the Society of Jesus – which he joined after being left a widower – and to his faithfulness to the subject of his painting.

It is just in art, of course, that privileged place where the very essence of the battle painter's personality emerges and asserts itself with more vigour.

In the conflict, in the clash of armies, Courtois has actually detected a phenomenon where great energy and might is displayed and where – in the complete involvement of the



basic strength of man – the utmost intensity and tragedy is reached.

This tendency to turn contrasts into open fight – a tendency which involves and betrays a need for energetically figurative artistic representations, using weapons and blood – contributes to the inclusion of *Borgognone* in the characteristic spirit of the Baroque.

Courtois's marked predilection for battle themes can in fact be rightly understood as his own way of seeing and interpreting the most felt demands of the spirit of the XVII Century.

Internal conflict would be given a radical expression and be resolved – without dangerous and disquieting residuals – in absolute actions, in crucial outlets: therefore more on the dramatic and emotional planes than on the theoretical and ideological ones.

The rise of such a tendency was due to the feeling bred by the Counter-Reformation, which was permeating all the XVII Century art. It was a mightily affirmative and authoritative sentiment which – by avoiding the deep crux in which mannerist uneasiness and difficulties originated and leaving it fundamentally unsolved on the rational

One of the first works of the Borgognone, which represents a moment of preparation for the action of war.
Vatican Gallery, no. 807.

level – privileged the evidence of the sensory, of visual representation, and choreographic suggestion.

But Jacques didn't certainly come suddenly, without an earnest and intimate search, to absorbing all the potentialities of the baroque spirit and to incorporating them into his personal style.

The process which led him to stick to seventeenth Century tastes was a slow and gradual one. His love for Rome – the undisputed centre of irradiation of baroque art – is the first evidence.

It is not difficult to reconstruct the fundamental stages of this artistic journey; it can suffice to observe some of his first attempts at war subjects. They are three oil-paintings kept in the Vatican Gallery.

The first one in chronological order is undoubtedly no. 807. It is not actually a battle, but rather a representation of immediately preceding moments. Signs of agitation are in the

Left.

In the self-portrait, one of his last works, the Borgognone reaches artistic maturity. Here he reaches almost an impressionistic effect through the emphatic contrasts between his own austere image and the vain and violent activity of the world (symbolized by the miniature battle) which he has by now left behind him.
Galleria degli Uffizi - Florence.



animals: the three dogs in the foreground and the horses quivering and prancing. As for the rest, the scene is somewhat static, and this impression is emphasized by the motionless figure of the horseman summoning the troops with his bugle.

The second one is no. 810. The tendency to impart more and more energy to the scene becomes here more evident, but the figures' movements still retain a certain stereotyping and, above all, one does not get the immediate impression of the mass in motion, which will be a constant feature of Jacques' future art.

The third one is no. 442. In it, Courtois takes a decisive step towards the conquest of his own pictorial language, of his peculiar expression of volume and movement. The scene is agitated, the space grows with figures, the motions of drapings, of horse manes, of the fighters themselves gain naturalness and velocity. Courtois has by now mastered the style demonstrated in his best works.

For the realization of these pictures, Jacques certainly

availed himself of his triennial experience as a soldier of the Spanish army, which took place in the environs of Milan. This was in fact his first post since his arrival in Italy, where, in 1636, he was obliged to emigrate together with two of his younger brothers. He had to face such a dangerous journey because of the raging of the Thirty Years' War, which – with the death of his father – made it impossible for Jacques to go on living in France.

After his three-years' soldiering, Courtois devoted himself exclusively to his painting – which, in fact, he had never neglected – and gained considerable success.

In that age, a new taste for collecting pictures was arising, necessitating that the painters, as a consequence, concentrated their artistic creation on smaller canvases. According to such a trend, *Borgognone* preferred to paint easel-pictures rather than large pictures or frescoes, because the former were easily carried and sold and several patrons wished to hang them in their houses and mansions.

In a short time Jacques Courtois, called by now Giacomo Cortese, was known all over Italy, and particularly in Rome, (where after longing to be there, he finally arrived in 1640) as *Borgognone of the Battles*.

Sometime after, however, another painter became known in Rome as *Borgognone*: it was his younger brother Guglielmo, who was a painter of sacred subjects and left frescoes and altar-pieces in Rome and in many cathedrals of the Castelli (Castel Gandolfo, Ariccia, Monteporzio). He rarely painted military subjects. Besides the paintings in the Congregation of the Collegio Romano (which he made to complete the work begun by his brother Jacques) he left a very interesting fresco entitled the *Battaglia di Giosuè*, which he realized for the Quirinal Gallery by appointment of Pope Alexander VII.

It is interesting to observe how, when they are treating the same artistic subject, the two brothers show two deeply differing styles, so expressing a different sensitiveness to the various demands of the time.



A powerful perception of the whole – typical of the Baroque – rules and organizes Giacomo's battles, where the whirling mass of the fighters gravitates round an individual or a group standing out in the foreground.

This perception is lacking in Guglielmo's fresco of the Quirinal Gallery, where the definition of the details results in their being given greater weight than the total effect of the composition.

The warriors fight man to man. Theirs is an individual

battle. Their movements are almost theatrical, their sequence unwinds in a long foreground causing the flattening of perspective so that Joshua – in the act of appealing to the divine intervention which would stop the sun – is pushed in the background, above the fray, like a shadow without prominence.

In such choices, Guglielmo is a long way from baroque taste, which preferred to centre all the meaning and emotional power in the total effect, thus sacrificing the concentration on particulars. After all, this fresco is one of the first artistic works of Guglielmo. On the contrary, many baroque demands are met in the *Battaglia di Giosuè*.

The action of the picture takes up all the available space by the overlapping of his figures and leaves very little room for empty spaces.

All this fits perfectly into the baroque need to close, through its strong concreteness, every space against the corrosion of doubt.

The fear of doubt, of that eternal uncertainty which had troubled mannerist conscious-

ness during the years of the Council of Trent (we see, in literature, Hamlet's drama) turns, in painting, into fear of empty space, of that "suspension" which bears with it the risk of reviving the painful perplexity (consider, now, the opposite of Hamlet, Othello, who, never being touched by doubt, resolves his despair in a bloody and absolute action).

Therefore, filling up and crowding space becomes an urgent need of baroque art, a need which Guglielmo Courtois himself cannot escape.

In Giacomo, on the contrary, this trend is lighter and more controlled. Also his backgrounds are often filled with various objects such as towers, towns, castles and his skies with thick masses of clouds or with the smoke of the artilleries. They are, however, generally toned and distant and are never dominating on account of their heaviness and materiality, as in many contemporaries of his.

In the second, and more significant, phase of his artistic production, however, this trend to crowd the canvas with images

Left top.

The representation of the defeated enemies crushed by the fury of horses is a constant, and deeply humane, element in Courtois. Vatican Gallery, no. 810.

Above.

The Battaglia di Giosuè by Guglielmo Cortese, brother of Borgognone. The painter fills up space with soldiers who struggle man-to-man, while Giosuè – in the act of invoking divine intervention – is driven into the background. Quirinal Gallery - Rome.



causing the Inquisition to become more repressive.

Therefore the methods themselves wherewith the Restoration and the triumph of the Catholic Church were carried out – methods which substantially escaped any proper critical revision – rekindled that need for a persuasive clarity which we have already referred to.

The art which wished to mirror such a triumph was obliged to transfer the dimensions of matter and flesh to the world of faith and spirit.

The baroque art of sacred inspiration – especially in altarpieces – often presents a peculiar horizontal division of the pictorial space into these two worlds, the earthly one and the heavenly one, ascribing to both the same corporeal consistence.

The Angels, the Saints, the Madonnas, though they are hovering and triumphing in heaven, still retain an "instrumental" concreteness, that is, a concreteness whose purpose is to reaffirm to the perception of the senses the tangibility of the spiritual world.

With Giacomo Cortese these themes find complete and earnest realization, but they are never characterized by the typical heaviness of a large part of baroque art.

Proof of this can be found in the frescoes of the second phase of his artistic production which, besides being battle scenes, have a religious character.

They are the frescoes of the Chapel of the Oratory of the Congregation Prima Primaria at the Collegio Romano, which was established in 1658.

By that time, it was scarcely a year since Courtois had become a member of the Jesuit Community and soon the Vicar-General of the Order, Padre Gian Paolo Oliva, – a great connoisseur of fine arts – asked him to fresco the six lunettes and the six rectangular spaces below them in the Chapel of the Oratory.

Of these frescoes, those which Giacomo Cortese actually painted (some of them were executed by his brother Gu-

and figures in motion becomes evident also in Giacomo Cortese.

Gradually and deliberately, in fact – as we have already said – he came to consent to all the most prominent and typical trends of the Baroque, dominating in XVII Century Rome.

From this point of view, a crucial moment was Giacomo's entry into the Society of Jesus, which caused his further approach to the world of the Counter-Reformation.

Although in the first moment Cortese felt in himself a need to completely renounce any former activity – giving up, obviously, also the pleasure of painting – he after some time yielded a wide artistic production, at the invitation of the Jesuits themselves and of private individuals (in this instance, he obviously devolved his earnings to the community).

But the new religious inspiration, while urging him to people his skies with divine figures – in order to be able to tangibly demonstrate the providential guidance of human destiny and history – didn't distract his attention from the

military world.

Actually, he had a predilection for those episodes of religious and particularly biblical history where the power of divine intervention, side by side with the just, is clearly displayed in the crucial moment of the armed clash (the just winning against the adverse forces of evil).

It is just in this most interesting artistic work that the influence of the spirit of Counter-Reformation becomes deeper and more marked.

This influence revealed itself in Cortese and in his contemporaries as an impulse towards the creation of an art which would celebrate the Catholic Church, which, after the tempest of the Anglican Schism, was reaffirming on sounder bases its earthly and spiritual powers.

But the recuperation of those lost certainties was carried out through the imposition of the Dogmas of Faith constructed and professed by the Council of Trent, which was by that time refusing any dialogue with the other part of Christianity and



Facing page.

The Vittoria di San Luigi Re di Francia. The divine intervention in the action of war is symbolized here, in accordance with the dictates of baroque art, by two little angels bearing the crown of victory and the Fleurs-de-lis.

Chapel of the Oratory at the Collegio Romano.

Above.

The Vittoria di Narsete su Totila. The Borgognone invests here all his knowledge of perspective. The figures, animated by a great energy, crowd the pictorial space giving compactness to the composition. As always the artist, while celebrating a triumph, doesn't forgo its tragedy.

Chapel of the Oratory at the Collegio Romano.

Right.

The Vittoria di Re Ferdinando di Castiglia. A direct and sublime communication takes place here between the divine and the human. In comparison with the King and the Madonna, the battle, being a vain moment of earthly history, is transcended and acquires a deeper meaning by the providential intervention. The minuteness of the battle contrasting with the much bigger figures in the foreground will remain a characteristic trait of the Borgognone's last works.

Collegio Romano.



glielmo and others are of doubtful attribution) constitute his most valuable work.

The *Battaglia di San Luigi Re di Francia* bears the mark of the most vital and effective Borgognone. The figures of the

painting are endowed with great corporeal – almost sculptural – consistence and a powerful agitation generates life in them.

Furthermore, a deep imploring human suffering is on the dismayed countenances of the



defeated, as in the case of the soldier who has fallen on his back among the hoofs of the Saint King's white horse.

The battle, of course, is sponsored by the divine powers, here symbolized by two little angels – the one almost a specular image of the other – bearing the crown of victory and the Fleurs-de-lis of France.

The fresco of the *Vittoria di Narsete su Totila* appears still more compact and energetic. The space is crowded to the utmost, the force of movement skilfully expressed and the two knights in the foreground seem really to jump out of the pictorial space in their overwhelming charge which defeats King Totila and his men.

Here Cortese demonstrates a knowledgeable technique of colour and chiaroscuro which confers a volumetrical impression to the images. The calm figure of the Virgin, however, does not participate in the general structure of the painting and looks almost as if it was added afterwards.

In the *Vittoria di Re Ferdinando di Castiglia*, on the

contrary, the Madonna takes on a prominent dynamic role in the pictorial composition in that her figure is perfectly balanced on the opposite side by the figure of the King, who is completely detached from the fray and is kneeling in contemplation of her.

Here the divine intervention, which resolves the fight in favour of the Christian King, is more manifest than ever.

The violent movement of the war scene in the centre of the composition clearly contrasts with the hieratic immobility of the Virgin and the King. King Ferdinand can look at the battle from the outside while he is in communication with the heavenly powers and can perceive their action which rules and guides to a good end that feverish swarming of unaware mortals.

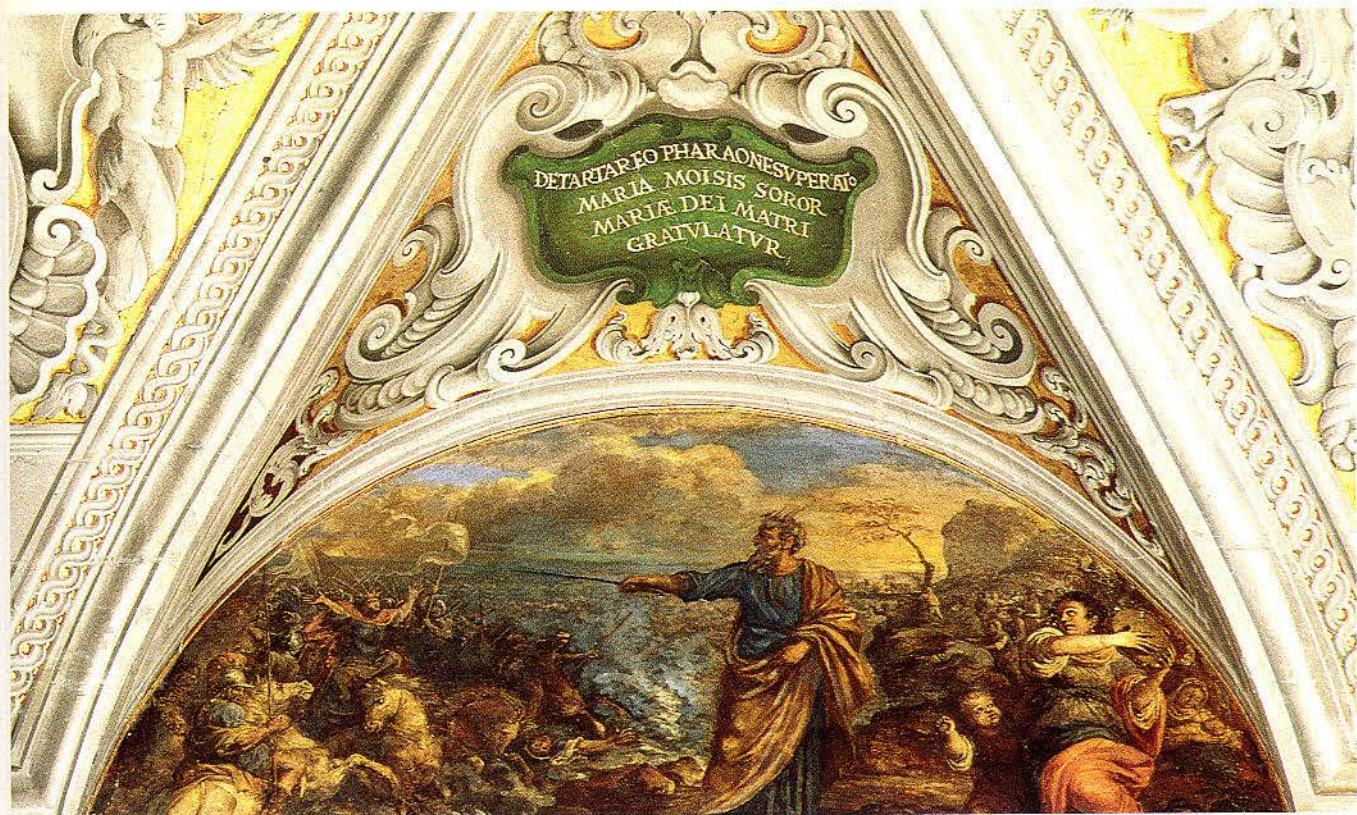
As for the battle itself, which represents the Moors, fleeing like a winding river, and Ferdinand's soldiers, running after them, it is of such minute proportions as to form an extremely complex and homogeneous whole.

Above and right.

The two lunettes represent the roles of two biblical heroines, Maria, sister of Moses, and Deborah. Their relationship to the Virgin, to whom the Chapel of the Oratory is consecrated, is explained in the cartouch written in latin.

The same characteristic minuteness of the battle composition can be found in the Lunettes. In these, as in the *Vittoria di Re Ferdinando di Castiglia*, the battles do not constitute the dominant theme anymore, but are introduced as a background to the biblical themes, by which the six paintings are inspired. Their protagonists are as many heroines of the Old Testament, whose relation with the Virgin – to whom the Chapel of the Oratory is consecrated – is shown with the help of epigraphs in latin.

Analogously, in the self-portrait – a wonderful example of *Borgognone's* maturest art – an extremely minute battle serves as a distant background for his figure, which therefore stands like a giant, dressed in the black robe of the Jesuits.



This self-portrait was painted in 1675, a year before the death of *Borgognone*, by appointment of Cosimo III de' Medici for the Galleria degli Uffizi of Florence.

On the serene and melancholy face of the artist we can read the overcoming of any involvement with the real world. The distancing from the agitation of the battle, which his figure dominates, is a symbol of this state of soul.

The battle fills up all the space behind his figure, reaching as far as the horizon. It is therefore a clear representation of the world (which he has by now left behind him) and a sign of his love for this particular artistic subject, to which he owes his fame as a painter.

The composition is full of contrasts produced by a deft use of chiaroscuro and by the busy and horizontal action in the background against the motionless and vertical portrait in the foreground.

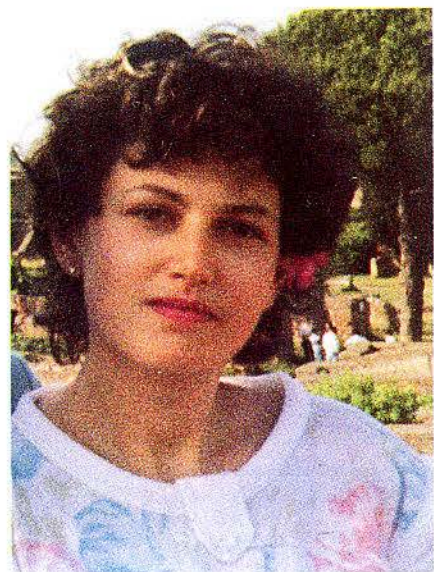
Some disquieting factor emerges from the vision of the picture because of the excessive portion of space devoted to the

big black area of the robe – which fills up more than half of it – and of those black clouds just on the edge of the canvas.

This is one of the last works of Giacomo Cortese. It can therefore be considered to be one of his last conquests in the field of art, in that here he succeeds in reaching an almost impressionistic effect.

This last image that "*Il Borgognone*" wished to express of himself was a conscious synthesis of his human, artistic and religious realities and constitutes his extreme message which is total detachment from the world.

Lia Nardella



Notes.

(1) All the biographical references and the dates are drawn from: "I pittori Borgognoni Cortese (Courtois) e la loro casa in Piazza di Spagna" by Francesco Alberto Salvagnini, Fratelli Palombi Editori, Roma, 1936.

(2) Wylie Sypher: "Rinascimento, Manierismo, Barocco", Marsilio Editori, Padova, 1968 ("Four Stages of Renaissance Style", 1955).

Lia Nardella was born in Rome on 31.10.1957. She has a degree in Modern Languages from Rome University and contributes to specialized reviews.

Since 1983 she has been on the staff of the editorial office of "Rivista Militare".



TRANSPIRING NBC SUIT

The Italian industry, in collaboration with the Armed Forces, has produced a combat garment with long-wear characteristics comparable to those of a normal uniform. At the same time, the suit's protective qualities meet NATO's most recent requirements.

The garment permits the body to transpire normally and, among other things:

- gives full protection from chemical and biological agents and – if used together with a gasmask – greatly reduces the effects of radioactive fallout;
- reduces to a minimum the risks of skin scalds caused by the flash of nuclear explosions;
- assures perfect camouflage, both in visible light and in infrared environments.

The suit is impermeable to rain and oils, is not damaged by lubricants and fuel and is washable by hand or machine.

This lightweight garment can be donned in a few seconds and fits a wide range of body sizes (3 sizes are sufficient to equip all individuals).

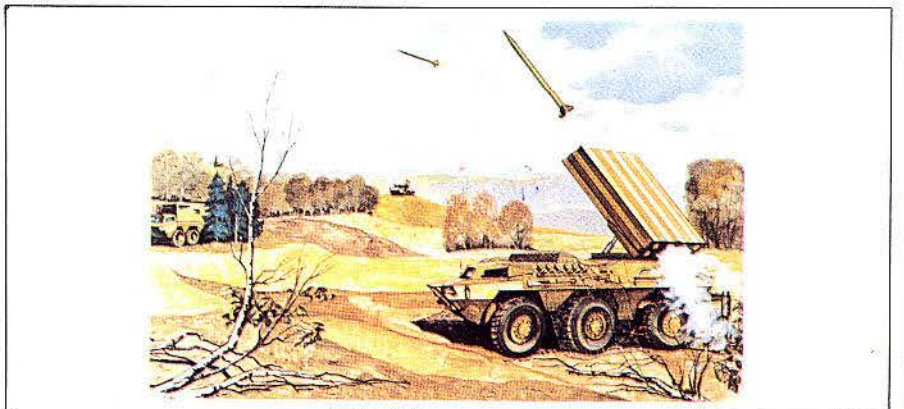
Strict protective effectiveness tests against war agents, including nerve gas, have been carried out in co-operation with specialized institutions of scientific research and have confirmed the validity of the transpiring NBC suit, which enables the Armed Forces to face the chemical and nuclear risks with an extremely reliable personal equipment.



"MFS" ANTIAIRCRAFT MISSILE

A consortium of industries has begun the feasibility study for the development of a medium-range anti-aircraft missile system, the "MFS" (Mittleres Flarak System) specifically conceived for the interception of missiles, airplanes and helicopters flying at low altitude.

The photograph shows the probable general architecture of the system, whose installation on cross-country wheeled vehicles is proof of an effort to achieve the highest mobility.



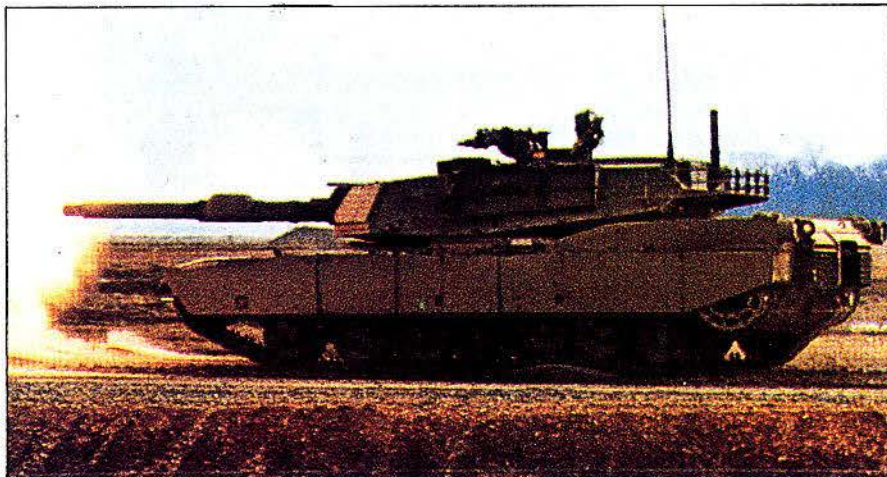


IMPROVEMENTS ON THE "ABRAMS" M1 TANK

The "Abrams" M1 A1 (former M1 E1) continues to enter service equipped with the new (larger) turret armed with the Rheinmetall 120 mm cannon, produced under licence in the US. Its weight has gone up to 60 t but, besides the replacement of the turret, the tank has undergone other improvements. It is now pressurized, with a filter in the air intake, for collective NBC protection; the ballistic computer rangefinder has been replaced by an even better one, and the armour has been further improved.

But the Arms Combat System Test Activity (CSTA) has more improvements under study, some of which should concern the whole M1 series:

- new longer-duration tracks, which get less hot for lower thermic detection: at present, the T156 tracks have a life span of 960-1,760 km depending on terrain and modes of employment. New tracks, known at the XT158, are now being tested. Compared with the West German D570N-DI-EHL, similar to those employed by the "Leopard 2", these tracks are cheaper and last longer;
- modified transmission and gears, to



reduce the maximum speed, which in practice is never used, from 72 to 65,5 km/h, while improving acceleration, which in certain situations is very useful for escaping fire rapidly and negotiating particular obstacles;

- reinforced M1 A1 shock absorbers, which offset the increase in weight resulted from the modifications (from 55 to 60 t) while keeping the same

ground-to-hull clearance (48 cm);

- better stowage capability, with a removable cage behind the turret for the less necessary materials.

Furthermore, accurate studies are under way to make maintenance and repairs easier and faster, with the aim of achieving the capability to perform most operations – up to a certain level – in a combat environment.

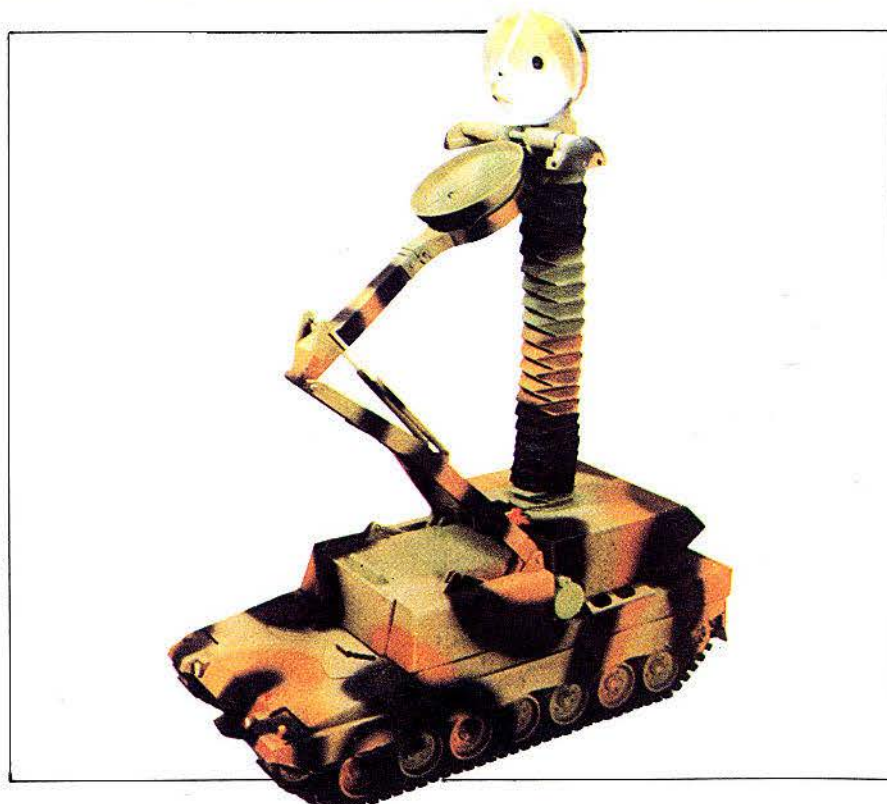
PROJECT OF A LASER ANTI-AIRCRAFT WEAPON

The German industry, sponsored by the Ministry of Defence, has started studies for an anti-aircraft weapon system based on laser.

The preliminary studies have led to the production of a scale model of what should be a system installed on the chassis of a "Leopard 2" tank.

Reportedly, the construction of a prototype/demonstrator is now about to begin; with this, the feasibility study proper will start.

In general, when we hear of a laser weapon, we instinctively think of the U.S. Strategic Defense Initiative; on the contrary, this type of weapon will probably be deployed on earth sooner than in space. The efficacy of the laser weapons at low altitudes and short distances could compel the attacking aircraft to penetrate at higher altitudes, with positive results for the air defence as a whole.





Umberto Cappuzzo: "WHAT KIND OF ARMY?,"

Dino Publications, Rome, 1986, 208 pages, 20,000 Lire

With an introduction by Senator GIOVANNI SPADOLINI

What type of defense? What kind of army? What is the point of the draft? Is a system of voluntary military service a viable alternative for our country? These and other questions, all raised in the course of a strenuous debate over military life in general, barracks living in particular and questions of consent and participation, have been given an unusual amount of attention in the mass media during the summer of 1986, leaving the general public both curious and perplexed concerning a number of points for which fitting explanations could not be found.

At issue are a set of weighty problems whose political, economic, technical and social ramifications have helped create a situation of balance – in terms of the choice to be made – which is ill-suited to facile analysis. The nature of this balanced framework is such that eventual modifications, be they motivated by functional considerations or by the exigencies of the moment, must necessarily be the fruit of realistic investigations together with concrete programmatic projections.

The unusual fervor currently in evidence was set off during the last few months by a number of painful incidents which have unexpectedly thrust the military organization – in all its many-faceted complexity – onto the national stage.

An essential lack of interest in situations and problems which had been mistakenly, though very willingly, seen as the exclusive domain of "professional" military personnel has been replaced by an almost morbid interest in the subject, an interest which all too often proves superficial, given the fickle nature of the judgements involved and the related desire to implement change merely for the sake of change.

Restrained by the incompatibility of their intellectual orientations, certain publications have had very little experience in covering, or following the progress of military issues. Not wanting to be left out in the cold, however, they have resorted to the standard anti-military, post-1968 "fare", working on the principle that it is better to lash out than to understand, or to try to make others understand.

A separate group of publications, working along more serene, more serious lines, has presented the under-

lying causes and problems, the areas of light as well as those of darkness, proposing a process of clarification which would undoubtedly benefit both the institution and the private citizen.

Whatever the case, the attention currently being paid to things military is definitely to be welcomed – despite the sad string of events which produced it – the result is a constructive dialogue geared towards solving a number of fundamental problems (with a particular emphasis on the condition of military life), problems which the armed forces have been trying for years, but only with varying degrees of success, to shift from what is essentially an internal context open only to those in the field to a dimension which truly involves the entire nation.

Given this scenario, the publication of Umberto Cappuzzo's book "What Kind of Army?" definitely represents a fitting, tremendously important event.

Imbued with a distinctive personality, the book offers both reflections and in-depth analyses, all the while providing a healthy undercurrent of its own proposals. At its core is a very lucid examination of both the distant and the more recent factors underlying the controversial relationship between the military and society, between the individual citizen and the institution of military service.

One of the root causes of this state of things is a "culturally-derived lack of understanding" traceable to a shortage of information and a low level of interest; indeed, a good many Italians, if not the majority, would be hard-pressed even to give an adequate answer to the question: "Why do the armed forces exist?"

"It seems like a joke", emphasizes the author, "but no one has ever conducted an information campaign designed to give a complete and, most important, convincing answer to this fundamental question. As a result, we have been burdened for far too long by this mysterious weight, this negative heritage, this tax whose purpose and function are only known to us in the sketchiest of terms".

This explains the need for spreading an improved understanding of the military dimension "as a social phenomenon of tremendous importance, given that it touches each and every male citizen at a crucial juncture in his life, the period between his schooling and

his entry into the working world". It also underscores the vital importance of making a unified effort – one involving every sector of society – aimed at guaranteeing that this period represent a useful, formative time for all involved – as is only right – both within a moral and civic framework and within the context of a consolidation of our indispensable democratic values, be they individual or collective, a task designed to further our country's progress.

These are the assumptions underlying an investigation which combines the historical, sociological and political perspectives as it sorts through a series of questions, clarifications and subtle points of fine-tuning on the way to its ultimate goal: a picture whose color and charm is matched only by its ability to express and explain a reality which appears unmistakably alive and rich with potential for the future.

The book is structured as an interview. Emilio Cavaterra puts the questions to Cappuzzo, whose answers lend form and substance to the convictions and intellectual positions he has developed over the course of a long, intensely lived career, a career which has taken him to the very heights of the military establishment.

Written in this concise, indirect format, "What Kind of Army?" amounts to an X-ray of the Service as it stands today: the contradictions are all there, but so are the causes for hope and the signs of vitality.

The book is not meant, however, as a mere "guide" for those new to the field or a simple review of the many military problems currently up for discussion. Thanks to its undercurrent of substantive proposals, it reaches beyond the scope of an exclusively descriptive or critical work, becoming a highly intelligent catalyst to further understanding and action.

This is the sense of the "strategy for structural renewal" which Cappuzzo lays out as an "updated understanding of a modern military institution's *raison d'être*" within a society which must, for its own part, continue on in the development of its civil consciousness.

In keeping with this line of thought, a third alternative arises in the dilemma over whether to maintain an army of conscripts or an army of professionals: a militia-army manned by citizen-



soldiers who "view national security as an essential function of life in a community".

Here, the term "security" is used in its broadest possible sense, referring both to military and civil service; in short, to a system of "service to one's country" in which all citizens, without exception, must offer their contribution in order that "the citizen might see himself as a 'civis' participating in the Res Publica".

Anything but utopian, this scenario rests on an intuitive perception of a new society which has already taken shape among us.

In the last few years, the country has become more thoroughly homogeneous than ever before, overcoming centuries-old contrasts and artificial divisions.

It is up to the nation's political and cultural leaders to further this process, renewing what are by now worn-out sociological and economic categories and smoothing the road towards the greater social and national maturity which already represent a part of our present.

Viewed in this light, one can safely hypothesize a new, more authentic relationship between the Army and society.

Sandro Fantina



G. Tumiatì: "Prigionieri nel Texas" ("Prisoners in Texas"), Mursia, Milan, 1985, 204 pages, 14,000 Lire.

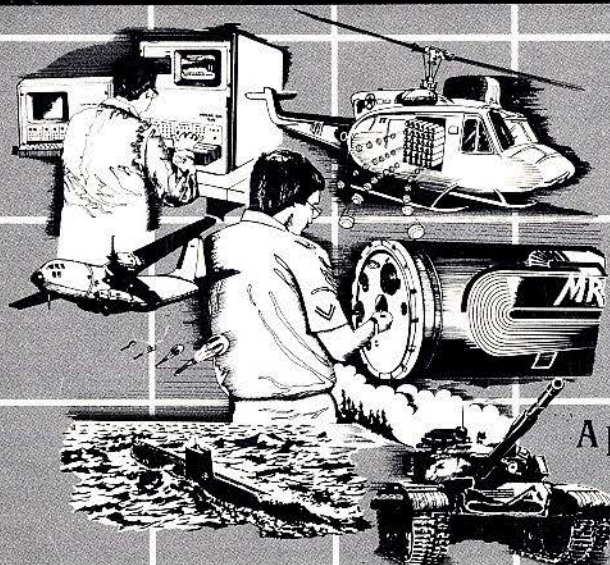
Up to now, one voice has always been missing from the tragic chorus of Italian soldiers who fought in World War Two: the voice of the very few men who experienced the singular fate of undergoing years of imprisonment in the United States and then choosing not to rejoin the fight on

the side of the allies. This gap has now been filled by the journalist and writer Gaetano Tumiatì, who tells of his own experience as a young cavalry lieutenant captured after two years of combat in May of 1943 on the occasion of the fall of Tunisia and then sent off to an isolated prison camp in the Texas desert, where he remained until the end of January 1946.

In reality, the camp was a very comfortable, clean place where Tumiatì and his fellow officers were treated in a surprisingly lackadaisical, generous way, though, if the truth be told, not without an undercurrent of disdain; in any event, conditions were decidedly better – at least during the initial part of their confinement – than those suffered by the prisoners languishing in the camps of Africa and India, or even those experienced by a large part of Italy's civilian population.

In what amounted to a limbo, almost totally cut off from the rest of the world, the young officers waited, discovering previously unknown artistic bents (one of the more interesting cases is that of Giuseppe Berto, who actually found his vocation as a writer in the prison camp, where he penned some of his most beautiful works) and organizing an eager hodgepodge of intellectual activities, seminars and impromptu conferences, all of which

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came to a stop with the incredible news of September 8th.

Not possessing any information or direction from above, left entirely to their own devices and subjected to incessant pressure by the Americans, who wanted them to join the Allied cause as soon as possible (which meant an immediate return home), the prisoners tore themselves apart in cruel, painful debates, until, by the end, only a very few had refused the American offer. For those men, labelled as die-hard fascists by the Americans (though in reality, as Tumiatì explains, the motives of those who stayed in the camp were numerous and complex; there were some who refused to change sides out of respect for their fallen comrades, while others turned out to be dogmatic Marxists), the period that followed was one of increasing abuse and ever more stringent oppression, culminating in a regime of hunger and suffering which stretched almost to the moment of their delayed liberation.

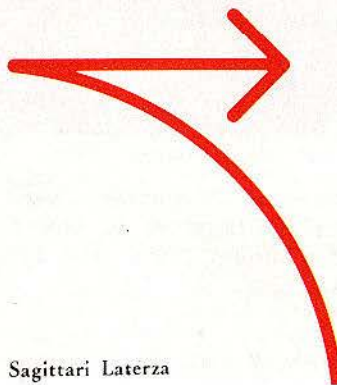
Tumiatì remained steadfast in his decision to suffer the consequences of his initial beliefs right down to the bitter end, and this resolve was only strengthened by the devastating news that his younger brother – to whom the most moving pages of the book are dedicated – also a tank officer and a volunteer in the African campaign, had become a commander in the resistance following the events of September 8, and was captured by the fascists. Refusing the clemency offered him by his captors, he was shot, equally steadfast in his loyalty to the other side (today, the 19th armored battalion of the Friuli Brigade is named after Francesco Tumiatì, holder of Italy's highest military decoration, the Gold Medal). And here the narrative ends.

The strength of the work lies in its vivid moral portrait of a generation betrayed, a generation which proved itself able to suffer and fight with dignity in a pointless war. The true protagonists of the book – even more so than the telling description of the prison camp microcosm, a tableau created with unusual sincerity and not a little affectionate irony – are the consciences of Tumiatì and his companions, the anguished conflict between a pained search for dignity (a quality which had to be reaffirmed before the eyes of the enemy as well) and the first doubts concerning the possibly false nature of the values they had grown up with, values which they were nevertheless loath to abandon, convinced that it was too late to change sides. At a remove of forty years, when history's judgement on the nature of those wounds is calm and definitive, one can not help but cast a kind eye at young men like Tumiatì, men who, having been betrayed in the generosity of their youth by the fascist regime, believed that they could ransom the dignity of their country,

their army and their selves by choosing the path of sacrifice.

Daniele Ravenna

Gambino Vivere con la Bomba



Sagittari Laterza

A. Gambino: "Vivere con la Bomba" ("Living with the Bomb"), Laterza, Bari, 1986, 333 pages, 26,000 Lire.

The dawn of nuclear weapons has changed the role of war as an instrument of politics. This transformation, however, has not been met by a corresponding change in culture and politico-strategic procedures. As is always the case, emotional reactions, feelings of uncertainty and crises have come to the surface. Nuclear arms are not, however, possessed of their own regulating mechanisms. Political and strategic choices are not determined in relation to the available technology alone. They are the result of related perceptions and interests. These, in turn, are not identical in Europe and the United States. The evolution of technology, as well as the shift in the balance of power and the changing nature of United States domestic politics, have put some of the certainties of the past up for discussion, especially in the area of the United States' nuclear guarantee to Europe.

The period of "nuclear innocence" lasted as long as America enjoyed absolute superiority. Nuclear arms could still be considered instruments of war and a nuclear victory was a viable option. Bertrand Russell, whose conversion to pacifism was to come at a later date, could blithely advise President Truman on the wisdom of attacking the USSR with nuclear weapons before the Soviets themselves became a nuclear power.

Following the end of the United States' absolute superiority, and the

beginning of its current vulnerability, the situation became much more complicated. The idea of a massive, automatic deployment of nuclear arms was replaced by a model for selective use as formulated in the strategy of flexible response. In practical terms, a potential theater of war – a European theater in which direct, conventional defences would be supported by tactical nuclear weapons – was set off from an impossible, unthinkable type of war: a direct exchange of strategic nuclear attacks between the two superpowers. Obviously, this formulation did not sit well with the Europeans. Those nations which were able to free themselves from the system, such as De Gaulle's France, did so by establishing their own national nuclear deterrents. Those who, for one reason or another, did not have this option – such as Germany and Italy – made the best of a bad situation by pretending to be convinced that the doctrine of flexible response was primarily a strategy of deterrence which posed no danger in terms of an eventual test by fire.

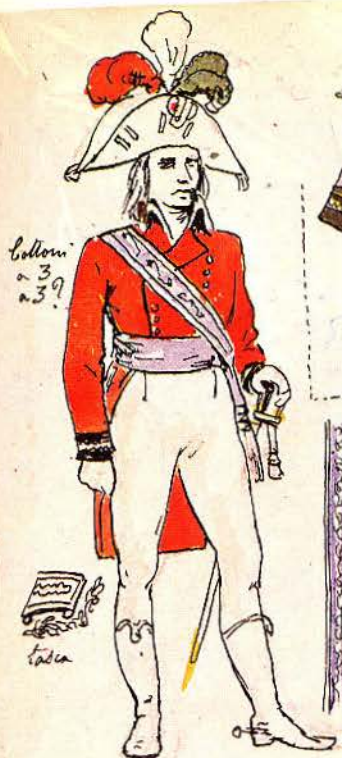
Today, both the overall situation and the perception of specific European national interests within the collective framework of the Alliance's interests are changing. Certain choices must be made, no matter how weighty and difficult they prove to be. Before this is done, however, it is important that the ramifications of nuclear arms, as well as the changes they have set in motion, be understood.

This is what Gambino's book sets out to do.

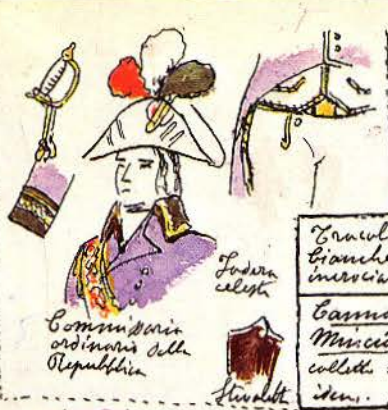
The author does not contemplate solutions. The various issues are approached in a manner which proves more problematic and indirect than programmatic and declarative. An effort is made to win the reader over through a very subtle line of thought, one which, at times, may actually be too indirect and veiled. The conclusions, however, are clear enough. It is not possible for a mid-sized power to entrust its own security to other states; any doctrine of nuclear victory is to be rejected; nuclear arms must continue to be instruments of "non-war": in other words, weapons employed for the sole purpose of deterrence; the deterrence itself cannot be broad-based, but must remain minimal, meaning that it can not exceed the limits of a national framework; the idea of unilaterally eliminating the bomb, a proposal backed by certain pacifist groups, is not only foolish, but downright dangerous; the bomb exists, and it can not be "uninvented". The only responsible course is to become familiar with it, gaining an understanding of its implications in the process, and formulate our actions accordingly. These are reasonable suggestions which have our full support.

Carlo Bess

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Colonn.
39
39



Commissionario
ordinario della
Repubblica

Fascia
celeste

Cravatte
bianche
invisate

20 cordoni pasta
anche di diletta

Coltore
bianchi

Trucchi guarniti
in gile -
bajonetta feta.

Spalline
rosse

Calzoni
di diletta

Regia di
aquila
e 2 corone
- nel

Camomora del
Mancini = Abito tutto nero, tipo artiglieria,
colletti e pettine idem, sorse, filetti, paramani
idem. fascie, bajonetta, giletto - Il resto
come l'Artiglieria di piedi

Orfani Urbani

Abito verde scuro da
un petto,
calzoni
nervi a filo rosso
stivali corte orlati di bianco

Fascia
di bianco

Postura del
abito

Milizia Urbana

Fascia, gilet, pantaloni
calze e paramani bianchi
Colonn. del gilet idem -
Fascia gialla alla scarpe - Bottoni

Calzoni
di bianco

Capelli
borrati di giallo

Ispettore alle Bassegne

Fanteria Leggera

8 Batte

Fanteria
di linea di
regg.

Divisione
della

Paramani
o fascie
come la
leggera



Da Humbert

Bravo del Genio

Abito come il Tenente d'Artiglieria,
colletti uguali, filetti rossi, paramani a punta nera orlati
in rosso, fascie e calzoni rossi, colletti gialli - Spalline
da granatieri - Stivali - Cappelli con coccarde, giletto bianco,
pomponi rossi, a forma d'ulivo. Buffetteria bianca, nei
- Col di fanteria, dragoni e gliandi rossi, Valzer

Ingenere Geografo - Abito e reversi neri,
collo, filetti, fodora, retrorossi, paramani azzurri, bottoni
argentei, vesti e calzoni bianchi, spalline argentei, epaule,
stivali, cappelli, guastri neri del Genio.

Guardia ed Agente del Genio - Come i Zappatori
del Genio fondo nero, distintivi neri, paramani a punta
orlati rossi, contrasti spalline filettate rossi, cappelli con coccarde
e giletto bianco - Giletto bianco o nero, fascie a intonaco
bianco allungate gialle - Dragoni bianchi e gliandi rossi.

Collegi Militari di Milano, Modena, Pavia - Abito
nero come la Legione lombarda e d'Alghira - contrasti spalline
neri - Collo rossi, filetti bianchi, paramani rossi con fascie
a 3 punte bianche - 1 petto - Filettatura rossa al petto - Fascie
da oro bianche - Calzoni neri - Fascie di fanteria
Stivali, piume con elze stiva, petto giletto
nero - due bande nere ai calzoni.

Fanteria di Linea

Adjutante Maggiore

Supremo
p. ten.

Bottoni



Guardia del Presidente

gran tenente

piccolo tenente =

Abito ad un
petto, risolti
all'alto neri
con coccarde (?) bianchi
spalline e cordoni come nella
gran uniforme

Bandolieri
bianchi

gran tenente

piccolo tenente =

Abito ad un
petto, risolti
all'alto neri
con coccarde (?) bianchi
spalline e cordoni come nella
gran uniforme

gran tenente

piccolo tenente =

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spalline e cordoni come nella
gran uniforme

gran tenente

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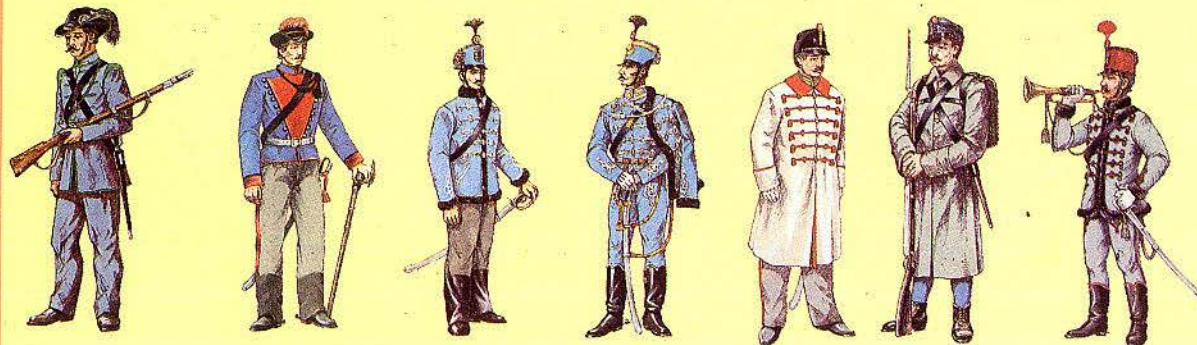
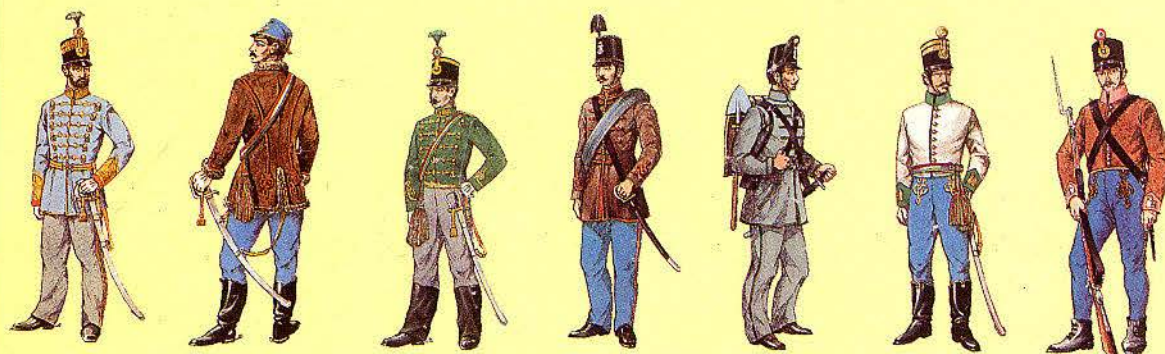
Genaromori Italiani (Humbert)

3 Legioni, 2 sq. 12 comp.

Abito verde, collo, reversi in panno,
paramani e loro petti, fodora, retrorossi, reversi -
filetti bianchi al collo, reversi - petti del paramani,
bottoni bianchi - corollina bianca a sinistra,
Veste a carotina bianca - giletto bianco o nero, cappelli
nero senza coccarde - paramani rossi - 2 corone -
mentre di fanteria - Dragoni bianchi e gliandi rossi
guastri di fanteria, fascie di dragoni - Cavalieri -
Stiva neri giletto e pantaloni gialli - armamenti dragoni
Guastri - paramani di fanteria

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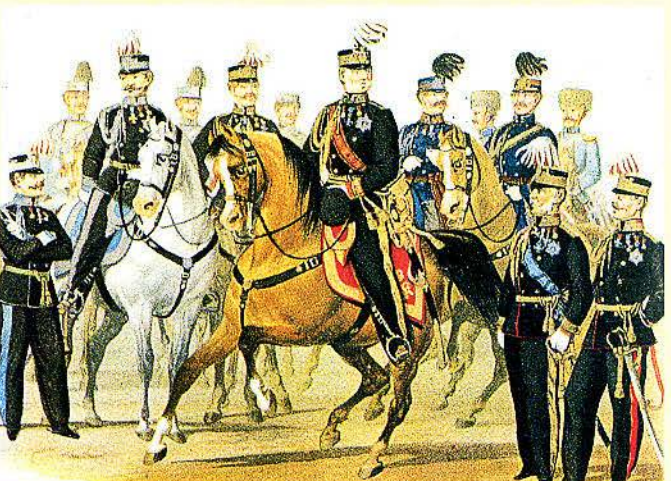
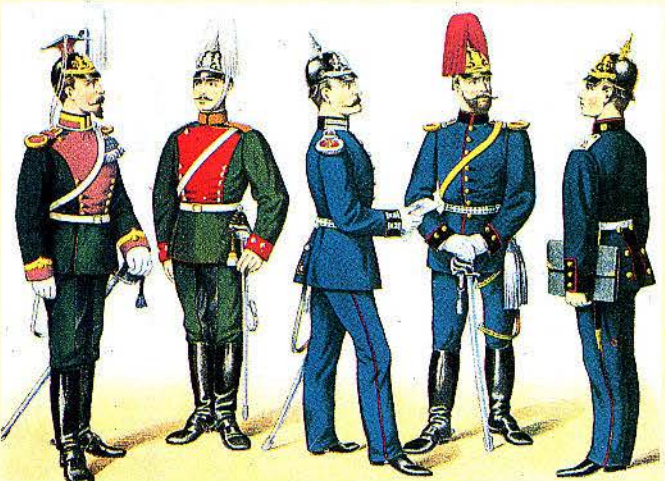
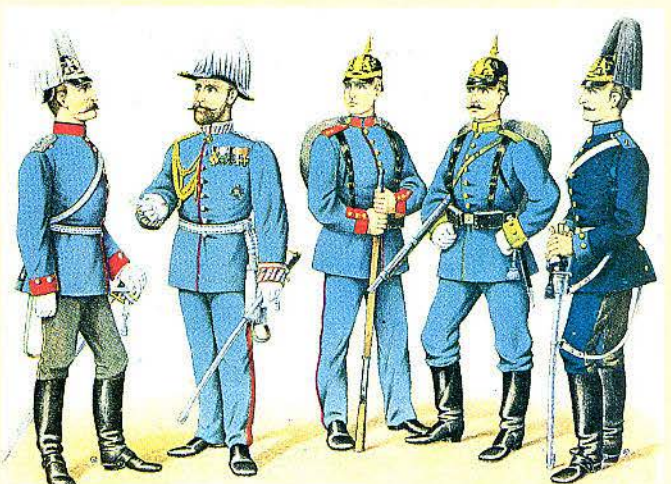
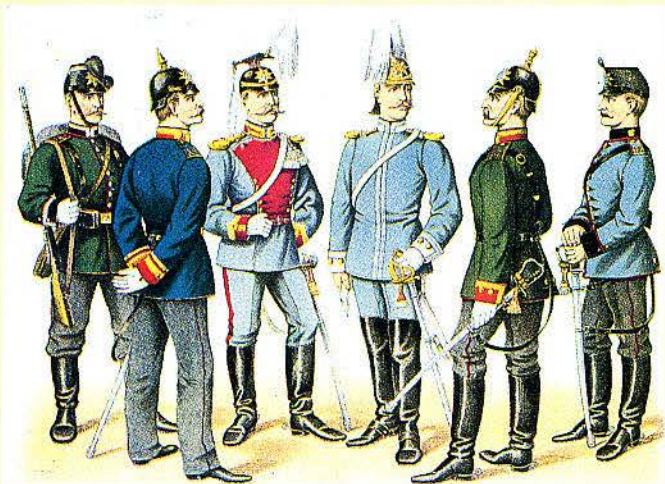
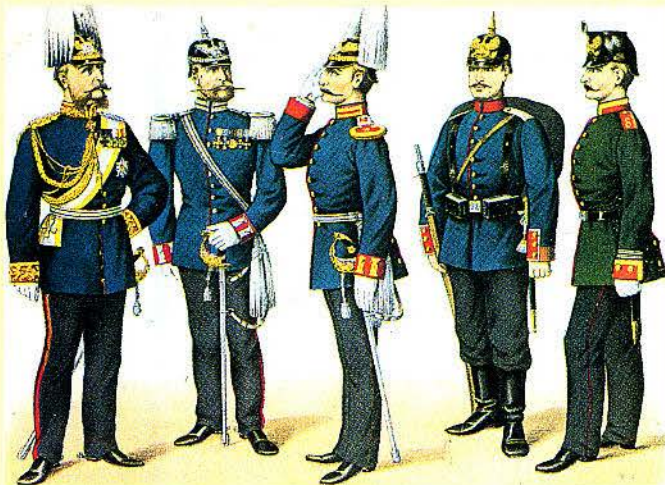
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Number five 1987
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THE PRESENT SITUATION OF THE ARMY AND ITS OUTLOOK FOR THE FUTURE

The Army is going through a new phase of structural reorganization and modernization aimed at improving the territorial and logistic sectors and increasing the efficiency of the operational component.

There is nothing revolutionary in this process. As a matter of fact, it is a cyclical renovation — a physiological one at that — with a view to harmonizing all the components of the land instrument, considering the tasks, the available resources and the deriving possibility to obtain a better balance between quantity and quality.

Well pondered innovations, therefore, and no revolution. In this sense — and here let me introduce a quotation which I deem pertinent — we are encouraged and supported by the advice and warnings of two great figures of the past, who lived in very different times and environments. Thucydides and Victor Hugo.

Both, addressing themselves to the rulers of their time, maintained that the ability to

carefully choose among the novelties which can be introduced each day in the contingent reality is one of the most difficult tasks that confront those who have decisional responsibilities.

Coming back to our times and the restructuring of the Service, the fact that the process is a cyclical and physiological one does by no means signify that it is a simple one, considering that it concerns various aspects, many of which require significant interventions, for they have been inadequate for quite some time, for various concurring reasons, mostly of the financial kind but also normative and social ones, especially in relation to the territorial and logistic sectors.

PERSONNEL

The precondition is, no doubt, a satisfactory solution of the personnel's problems.

The Institution must come

up to the Cadres' legitimate expectations.

The atypicality of the military condition must obtain a definite recognition in its essential significance and in its untransgressible limitations.

It is, in fact, a fundamental parameter which must be understood, lived and upheld with energy.

First of all by us, the military, with rigorous coherence of principles and actions, with pride in our status, where certain limitations of the individual liberties are an integrant part of the moral privilege of being responsible for the security and defence of the Country.

Secondly by the national community, which, from the moral strength of its soldier-citizens can derive good omens for a future of peaceful progress.

Within this framework, I deem it right to underline, not without a justified optimism, the growing attention of the public opinion and of the Government to the problem of the wages,



Antiaircraft artillery: operators of the electronic CP of a Hawk battery.

careers and the many other problems typical of a status — the military status, that is — which must be carefully protected, in order to avoid corruption by behaviours alien to military ethics.

Granted that the political phase presently experienced by our country marks a forced pause for all the measures which must be discussed by Parliament, the recent Decree on the wages is the first but significant evidence of the willingness to substantially recognize the professional value and level of the Cadres' work.

Moreover, the Decree acknowledges — although in terms limited for now to the quantitative plane — some of the fundamental principles included in the Bill passed by the Defence Committee of the Chamber of Deputies: the **"homogenization", the military allowance and the functional allowance for noncommissioned Officers.**

Another particularly interesting subject is that of the Recruitment, Status and

Promotion of Officers.

After quite some time of study and interservice planning, a bill has been outlined for a new organic law aimed at straightening out the whole sector, warranting — inter alia — less "cruel" careers to all personnel as well as equivalent profiles for personnel in different roles, but having similar functions.

As regards the NCOs — another indispensable component of the instrument — it is our intention to promote every possible improvement of the existing organic law.

These and other numerous measures are aimed at strengthening the motivation of the Cadres, restoring their conviction that the country and its ruling class do not underestimate the commitment and sacrifice of the men in uniform.

A motivation which is and must remain — obviously — outside and above remunerations, albeit a certain correlation between the two elements cannot be overlooked.

The fact remains that the Army personnel continues to be a precious patrimony of

enthusiasm, sense of duty, generous devotion to the community, faith in the highest ethic values.

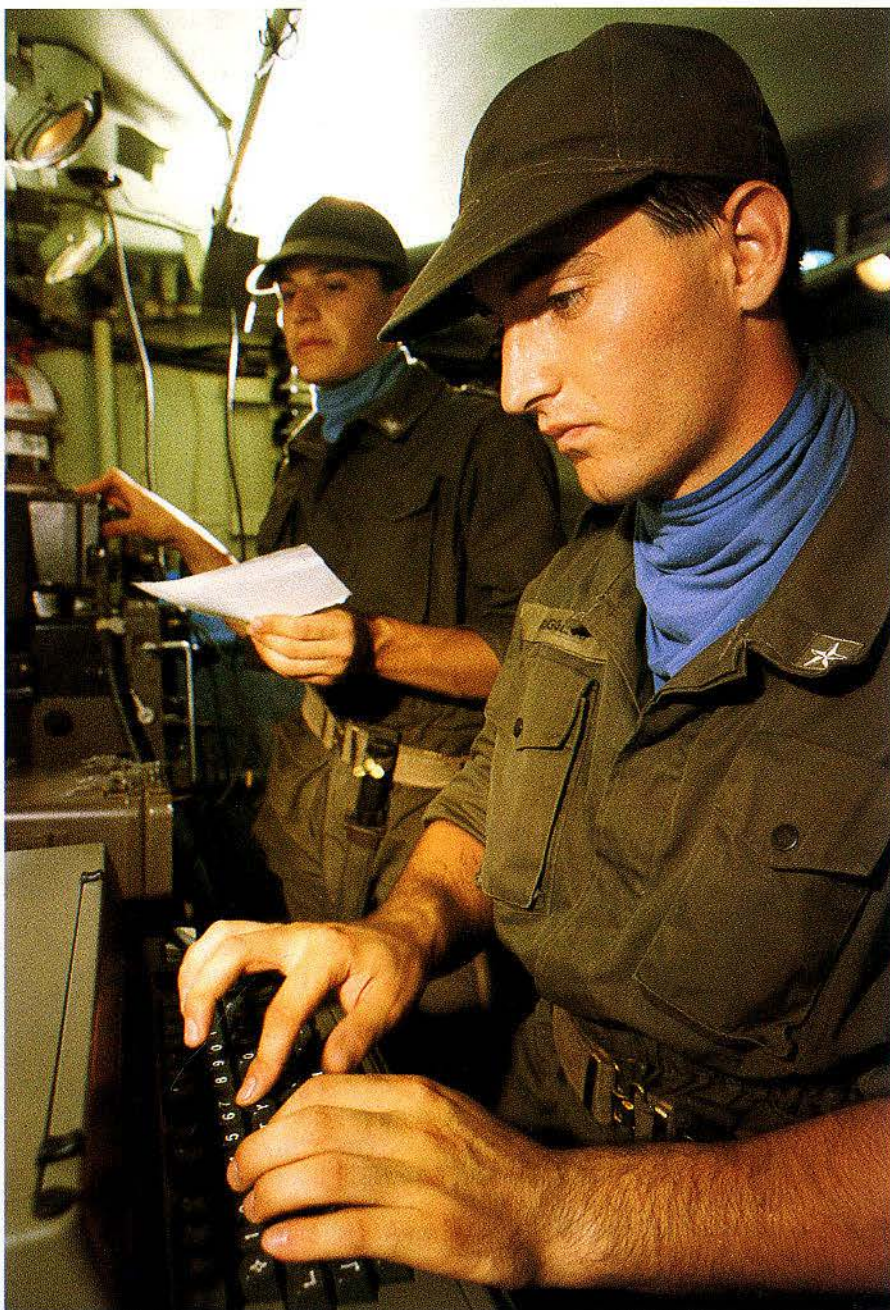
It is our duty to preserve it firm and integral, to the advantage of the whole community, and to repulse and counter all creeping efforts to spread well-aimed disinformation.

As a matter of fact, the availability of modern procedures of employment and of technologically adequate means and material does not suffice if the man who is supposed to employ such procedures and materials does not feel in himself the indispensable will, charge and moral tension.

Talking about personnel, I cannot avoid mentioning the conscript personnel, to the training, care and welfare of whom our Cadres devote most part of their energies.

Most of our young are reactive, willing and well prepared, and accept with great maturity what is asked of them.

On our part, we have the moral obligation to take care that their condition and experience be useful and



Signal Corps: radio teletype operators.

the military organization has reached its seventh year and is by now a living and working reality, whose essential functions are — and must remain — those of helping to outline and define a credible picture of the economic, normative and social needs of the personnel and to make the relevant concrete recommendations.

The system — which has proved effective — can doubtlessly be perfected, but it is important to remember that the Representation is — and must remain — an institution of the military organization.

Any kind of extensive interpretation of this fundamental principle would inevitably entail the risk of starting processes which would destabilize the cohesion and the nonpolitical character of the military.

CONSCRIPTION, RECRUITMENT, MOBILIZATION AND MEDICAL CORPS

In continuing the survey of the situation, we find two other sectors, highly interactive and of great social importance, which occupy a priority position in the current programmes of reorganization: Conscription - Recruitment - Mobilization and the Medical Corps.

As regards Conscription, Recruitment and Mobilization, the rationalization of the existing structures, the computerization, the improvement of the medical examinations and controls will make the relations between the citizen and the military more and more clear, friendly and smooth.

For what concerns the medical sector, the restructuring is based on the separation of the medico-legal activities from those of hospitalization and treatment, on the improvement of the specialistic capabilities of some hospitals, which will be upgraded to the level of

productive in every possible aspect.

As for their status and welfare, the law for the reform of conscription has met many expectations and, among other things, has introduced concrete incentives to voluntary service.

Moreover, in order to significantly improve the off-duty opportunities and the integration of the military in the local realities, a vast programme is being carried out in concert with the administrations of Regions, Provinces and Cities, concerning professional training,

educational, recreational and sport activities, as well as transportations.

Up to now there are agreements with the Regions of Toscana, Emilia Romagna, Friuli Venezia-Giulia, Umbria, Veneto, Lombardia, Abruzzi, Molise, Lazio, Piemonte, Marche, Calabria and many others, at provincial and municipal level.

The programme is rapidly being implemented and foreseeably will shortly be extended also to the remaining Regions. Finally, a brief mention of the military Representation.

This important institution of

polyclinics, on the modernization of medical components and infrastructure.

Nevertheless, in order to carry out the modernization programmes appropriately, one must also consider the indispensable updating of the present regulations and, above all, the filling of the considerable shortage of doctors and paramedic personnel.

The solution of these problems is in part included in the Bill regarding the "Norms for the reorganization of the Military Medical Service" which provides for, among other things, a substantial increase in the staff of Officers and NCOs of the Medical Corps.

As for the training of paramedics, a new NCO School for Professional Hospital Attendants will be established in Rome next September.

The distinctive goal of this effort towards reform and improvement is that of making the Military Medical Service the driving force of the entire national health service; it is a goal which can appropriately be framed into a greater and more ambitious — I dare say more fascinating — one, in which the Army is committed to set itself as a point of reference and vanguard for the other institutions of the State.

INFRASTRUCTURE

The so-called "Infrastructure Platform" of the Army — about which there has been a lot of discussion, especially towards the end of last year — is made up by 500 barracks, only 10% of which has been built after 1945.

Despite every possible type of maintenance and some transformations which were made in the following years, a good part of these installations is no more completely adequate to the needs of our times.

In particular, for 150 of these barracks one must carefully consider the possibility of a replacement in the short-medium term.

The possibility of a decisive leap forward in quality in this important sector is linked mainly to the Bill known as "Botta Bill", regarding the reorganization of the military infrastructure. The plan provides for an allocation of 2,500 billion Lire over several years, for the construction of barracks, according to a general conception of decentralization and improvement of the life conditions of the soldier.

Recently some significant amendments have been introduced regarding service lodgings for Officers and NCOs, as well as the possibility, by the same personnel, of buying a house on favourable terms.

Meanwhile there is a particularly important programme — authorized by the Minister of Defence — which envisages for the Army 13 new infrastructure units (divided in two lots, the first consisting of 10 barracks and the second of 3) to replace an equal number of barracks which will have to be closed down as soon as possible.

In this connection, activities are already under way for determining the areas where the new infrastructural units will be built.

Moreover, a study has been completed for the design of a **model barrack unit**, with the following characteristics:

- quarters for no more than 1000 men: each unit is conceived to accommodate one battalion of 750-800 soldiers, 150 volunteers and, eventually, between 50 and 100 members of the future women military service;
- possibility for the users to live and train in suitable surroundings, with appropriate facilities also for cultural and social activities.

The estimated cost of each of these barracks, built on an area of no less than 20ha, will be approximately from 30 to 35 billion Lire.

INFORMATICS

The programme for improving this sector, which is

today of vital importance for the management of the instrument, proceeds at a fast pace. Within this framework, we can say that:

- the computerization of programmes for the administrative management at Brigade and Military Region level is well under way;
- the automated management of conscription is already in full operation at the regional recruitment centres of Rome, Milan and Turin and will start soon at the centres of Naples, Perugia and Brescia. This will concern about 60% of the entire conscription force;
- the revision of the procedures for the automated formation of the conscript contingent on a regional basis is under way;
- the automated support for the operation of depots of spare parts for all combat means will be completed shortly.

EQUIPMENT AND MATERIALS

In connection with equipment and materials, many programmes have been launched concerning armament, mobility and command and control, aimed at getting rid, within the next five years, of some of the main deficiencies in the Service.

I shall just mention a few:

- "Milan" A/T medium range system: there is a total need for about 1000 systems, one third of which have already been introduced; of the remaining two thirds, which will be produced in Italy, 120 units will enter service within a short time;
- "Apilas" self-defence A/T system: a number of these systems have already been tested by F.I.R., together with two other systems, the German Panzerfaust and the British Law 80;
- national tank of the 2nd generation: the delivery of the first four prototypes is expected within the next autumn;
- armed armoured car 8 x 8: this vehicle will foreseeably enter service next summer;
- light armoured vehicle 4x4: its introduction is envisaged in 1989-1992;



Antiaircraft artillery: a noncommissioned Officer controlling a Hawk launcher.

From this stems the decision to divide the 24 Brigades deemed indispensable already in peacetime into: 7 Mechanized Brigades, 5 Armoured Brigades, 5 Alpine Brigades, 6 Armoured Car Brigades, 1 Paratroop Brigade.

The main innovations, common to all units, are:

- introduction of reconnaissance units;
- adoption of A/T and A/A self-defence weapons;
- improvement of the NBC sector and of the surveillance of the battlefield;
- upgrading of the logistic battalions, as a result of the introduction of new equipment and weapon systems.

But the most interesting innovation is perhaps the constitution of the Armoured Car Brigades, which will be established by transforming the four existing motorized Brigades, as well as the "Granatieri di Sardegna" and "Pinerolo" Mechanized Brigades.

The adoption of armoured cars — armed with 105mm guns — and of light armoured cars will give these Major Units the mobility which is required for joint missions in defence of the territory and the Rear Zones; moreover, in my opinion, it represents a step forward in the direction of the most modern conceptions which tend strongly to revalue the wheel (protected, of course) vis-à-vis the track.

Finally, a brief look at the mobilization Brigades. There will be three of them, based on the Alpine Military School ("Piemonte" Brigade), the Infantry & Cavalry School ("Lazio" Brigade) and the Armour School ("Puglie" Brigade).

TRAINING

The organizational innovations and the acquisition of new equipment and weapon systems will nevertheless be useless if we do not have

- VCC 80: its introduction is planned for the period 1991-1995;
- A 129 A/T helicopter: the first phase of distribution of 15 helicopters is under way. The second phase (45 helicopters) will be completed within the period 1988-1991;
- A/A "Stinger" self-defence system: the first 30 systems have arrived from the U.S. The remaining 120 are expected this year. The training of units and personnel has already started;
- wheeled vehicles: the second quota of 300 VM/90s (IVECO) is being delivered to Fo.P.I.;
- Catrin: as concerns this system, capable of improving the efficiency of the "field transmissions" and of filling the gaps in the sectors of

"battlefield surveillance" and "airspace control" with its three subsystems Sorao, Soatcc and Sotrin, the realization of the first complete unit for an Army Corps is planned for 1992.

OPERATIONAL AND TRAINING ASPECTS TYPOLOGY OF BRIGADES

According to the tasks deriving from the 1st, 4th and 5th joint mission and the introduction of new equipment, the reorganization of the Army envisages a revision of the organizational structures, in order to make the instrument more balanced and more capable to manoeuvre, and to simplify any possible wide-range interventions on the entire national territory.

personnel prepared and adequately trained for the employment of weapons and materials.

Therefore one of our primary objectives is and remains the increase of the training activity, also availing ourselves, whenever possible and suitable, of the support of electronics.

It could not be otherwise, because a good training ensures the accomplishment of the institutional tasks, produces self-reliance and is gratifying for the personnel involved.

In addition to this fundamental requirement, it becomes imperative to constantly update the professional preparation of our officers and noncommissioned officers, creating in them a familiarity with what is new and an open mind towards ever more rapid procedures.

Going back to the most traditional training, i.e. that of the recruit with his equipment and the means available to him, I cannot avoid mentioning here the still serious shortage of firing ranges, particularly in connection with target-firing with individual and unit weapons.

In order to improve the situation — at least in the sector of individual shooting — a programme has been launched, envisaging the construction, by 1993, of 10 shooting ranges, the first of which, already completed, will be opened shortly at Cecchignola and two more (Bellinzago Novarese and Belluno) will be operational by 1987.

The fact remains that a more responsive attitude by the Regions as regards this very important problem would be desirable.

In relation to this, the protocols of agreement with the various Administrations, which I mentioned before, are doubtlessly a most valid tool.

Personally, in my capacity of Commander of the Central Military Region, I have been able to ascertain that these

protocols — that in substance must be considered as a "framework law", to be gradually integrated according to the local possibilities and needs — have also the great advantage of permitting the establishment of personal relations of acquaintance, esteem and friendship between the responsible military authority and the public administrators. Frequently, these relations help to disentangle old and complicated problems which had seemed often unsolvable in the past.

We hope that this road will be followed more and more often and with fruitful results.

As a matter of fact, the Army, in order to meet its obligations to the country, must be able to do its training and needs suitable areas to do it, with the greatest sympathy, however, for the touristic and environmental questions, which doubtlessly deserve all our respect.

CONCLUSIONS

This is, in short, the situation and the most immediate prospects for making our Army more adequate to the tasks that confront it.

I believe that this picture, although painted as it is with quick strokes, makes clear that the Service **knows what it wants and in what direction it wants to go.**

The choices have been made with the best awareness, collegiality and timeliness possible, taking into account the not negligible contingent situations and difficulties.

We have followed very simple and nevertheless fundamental criteria:

- give breath and prestige to the "military condition";
- provide the instrument with organization and means adequate to the times and to the tasks.

But having discussed organization, equipment, weapon systems etc., in closing my writing I wish to go back to "man".

A man, who, when well trained and motivated, can employ with effectiveness even not-so-modern and sophisticated materials, while the contrary is absolutely impossible.

To this man we must address all our attention and every possible care: starting from the conscripts, of course, to finish with our Cadres. This must take place within a well-ordered and democratic hierarchy — in observance of art. 34 of our Constitution — therefore without ineffectual and incongruous demands for a destabilizing levelling of ranks.

Our Cadres devote with enthusiasm their entire life to military service, with all the sacrifices that it requires, with the certainty of carrying out a task which is indispensable for the security, the defence and the pacific progress of the whole national community.

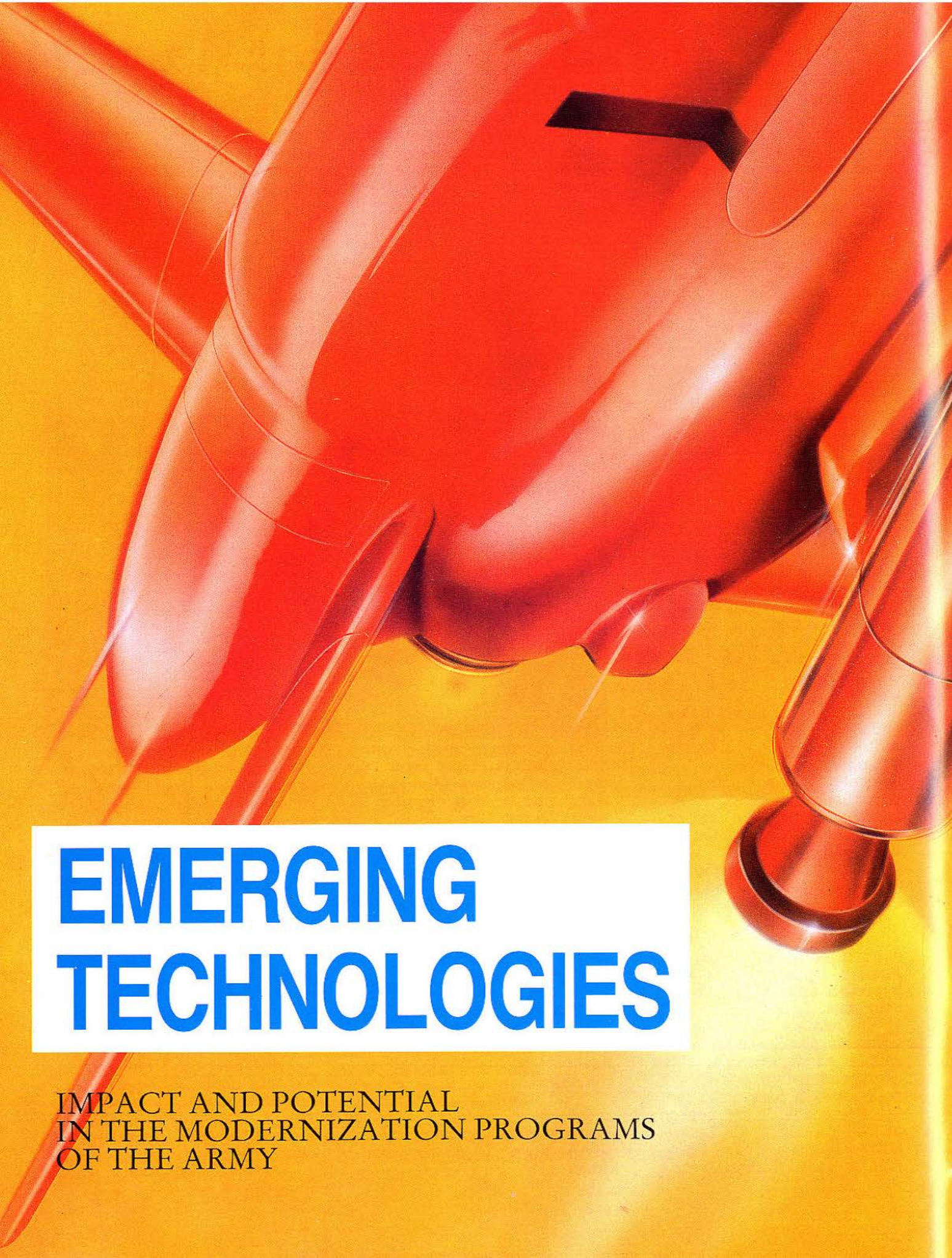
To them goes my deep-felt gratitude, in a moment when, all together, we are engaged in building a better Army.

Concrete steps have been made and are still being made. Therefore, we must look at the future with serene **confidence** and accept the challenges with unchanged sense of responsibility and, as always, with **good will, cohesion and professionalism**, in the name of that "atypicality" which is a "proprium" of the military status and of the "calling" which is its essence.

I would like to close with a thought borrowed from a student of the political problems of our times. Alastair Buchan, a Scotsman, who, in trying to discourage the paralyzing pessimism of some circles and to stimulate a greater accomplishing activity for the defence of the West, said: "We know what we must do, we know what we can do, we only have to do it!..."

Well, the most important commitment for all of us, members of the Army, will be that of bringing closer, as much as possible, what we can do to what we must do.

Ciro Di Martino



EMERGING TECHNOLOGIES

IMPACT AND POTENTIAL
IN THE MODERNIZATION PROGRAMS
OF THE ARMY

NEW TECHNOLOGIES ON THE THRESHOLD OF THE YEAR 2000

With a more trendy term they are now called emerging technologies, or, simply, E.T.

Throughout the history of man there have always been advanced techniques and technologies, correlated of course with the technological level of the time, which have been the stimuli and driving force in the evolution of society (hence emerging technologies are not a wholly new phenomenon of our age). It is however beyond doubt that technological development in the last century, especially in the military field, has proceeded at a markedly increased pace, and that the most advanced technologies, those which seem fantastic, are likewise undergoing frenzied changes. Thus in the space of a few years fantasy often becomes

reality and a general and systematic approach to their direct application to military and civil uses is given the highest priority.

Today, in the middle of the penultimate decade of the 20th century, notable for the amount of innovation which has taken place, new technologies have opened the possibility of unheard of developments. It is now possible to design and develop interesting new machines and materials for defense with very advanced performance characteristics in the space of a few short years. The effects of this will not fail to have a direct and determining impact on operational concepts. In light of the possibilities opened up by the new technologies, new doctrines are making headway. These are aimed at maximizing action in depth in the tactical/strategic territory of a hypothetical opponent and to

Those of us who have worked for years in management programs for the modernization of the armed forces' material are convinced of its vital importance to the future of the military.

It is difficult to treat this subject properly in an article because of its vastness and complexity.

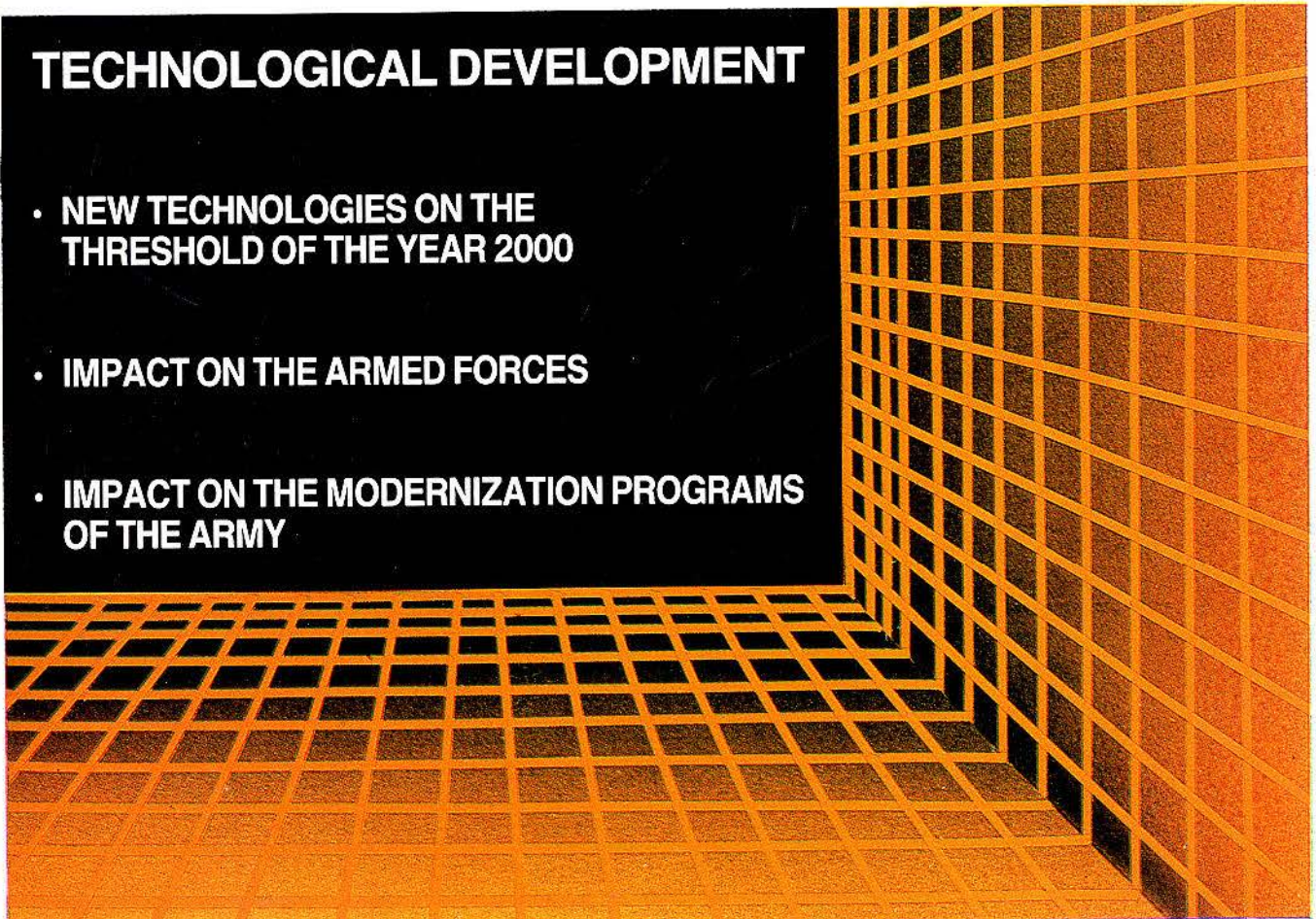
In an effort to offer an overview of the subject, however, it may be useful to adopt a scheme which involves (fig. 1):

- a review of the principal new technologies which are the focus of several international efforts (military and other) involving projects being implemented today which will have long range effects through the year 2000;
- an indication of the impact they are having on the Armed Forces;
- an illustration of the more evident effects they are having on modernization programs of the Army.

Fig. 1

TECHNOLOGICAL DEVELOPMENT

- NEW TECHNOLOGIES ON THE THRESHOLD OF THE YEAR 2000
- IMPACT ON THE ARMED FORCES
- IMPACT ON THE MODERNIZATION PROGRAMS OF THE ARMY



prepare strategic defenses, such as those made possible by the development of *space shields*.

The new technologies are discussed with a great deal of attention (because of the important political, economic, military and industrial interests involved), in the various NATO and European cooperative bodies and in the several member countries. At the same time and in this context studies are being undertaken to channel the common technological capabilities to the extent possible into research projects of important dimensions. These projects are of such magnitude as to exceed the narrow military orbit and involve to a varying extent all aspects of a nation's production.

What is the present situation regarding these new technologies?

First of all, they can be classified under two main headings:

- mature emerging technologies, comprising those which have already undergone preliminary research phases or engineering development;
- more advanced emerging technologies, comprising those which are in the initial identification stage.

The first concerns regarding the need to take advantage of the new technologies were voiced in NATO quarters, it being recognized that they constitute the most effective way to improve the defensive capability of the alliance and to maintain credibility in the *flexible response* doctrine, while at the same time reducing dependence on nuclear capacity.

As regards emerging technologies which are mature and useable in the short to medium term (in the 90s), a list of projects has been identified relative to ground operations which may be developed through collaborative efforts.

These mainly involve third generation weapons of very high technological content, some of which are already undergoing prefeasibility/feasibility studies.

They are concerned with ground and antiaircraft fire support, battlefield surveillance, selection of targets and field communications.

With regard to advanced technologies to be applied in the long term, it has not of course been possible to apply them to specific weapon systems yet. Accordingly, these studies are aimed at defining research projects to be conducted through direct collaborative efforts involving various industries. These technologies, which can be grouped in four areas, mainly concern sophisticated sensors, advanced information processing, advanced electronics, and high-efficiency non-electronics.

The concrete undertaking of cooperative technological projects obviously requires industrial and government-level agreements which are not always easily made considering the differences in levels of technological sophistication of the various countries and the need to safeguard security and to avoid the transfer of critical technologies to potential adversaries. However, it is significant that for the first time the exigencies of common defense have fostered the cooperative development of various projects right from the basic technological research phase, with the possibility of non-military applications, rather than efforts aimed exclusively at specific weapon systems. This undoubtedly contributes to lower research costs and to general acceptance of these initiatives.

The stimulus given by NATO towards use of new technologies has had a solidifying effect among European countries, which, being well aware that they are not in a position to join in technological collaboration on an equal basis with their overseas partner, have come to realize the need for closer collaboration so as to have a unified and effective role on the plane of world industrial competition.

From this derives the European initiative for cooperation in the field of technological research, which is intended to make the transatlantic dialogue more credible and the reciprocal exchange of equipment, of material and, above all, of technological knowledge, more balanced.

Accordingly, a complex of technological areas of interforce interest has been identified in the European sphere. From these, various cooperation projects have been derived which are already being studied by experts of the concerned industries of the different countries.

Among the most recent technological initiatives is the Strategic Defense Initiative (SDI) of the U.S., which is the most important for its size, the kinds of technologies involved, and the developments that can be expected. In European capitals this has been discussed for some time relative, to an eventual association for specific technological research projects.

The concept of strategic defense incorporated in SDI is, as is well known, directed toward subjecting enemy ballistic missiles to repeated engagements through deployment of large numbers of coordinated weapons at different points in their trajectory and at various altitudes, so as to increase the uncertainty of the potential attacker's success (complex defensive suppression system).

The SDI program therefore addresses a wide range of technologies and research projects, which have been grouped into five program elements:

- observation, targeting, pursuit and evaluation of the results of the engagement;
- direct energy weapons;
- kinetic energy weapons;
- survivability, killing power, and key technologies;
- advanced battle management systems architectures, C3 system.

The direct interest of the Army is limited, but a good

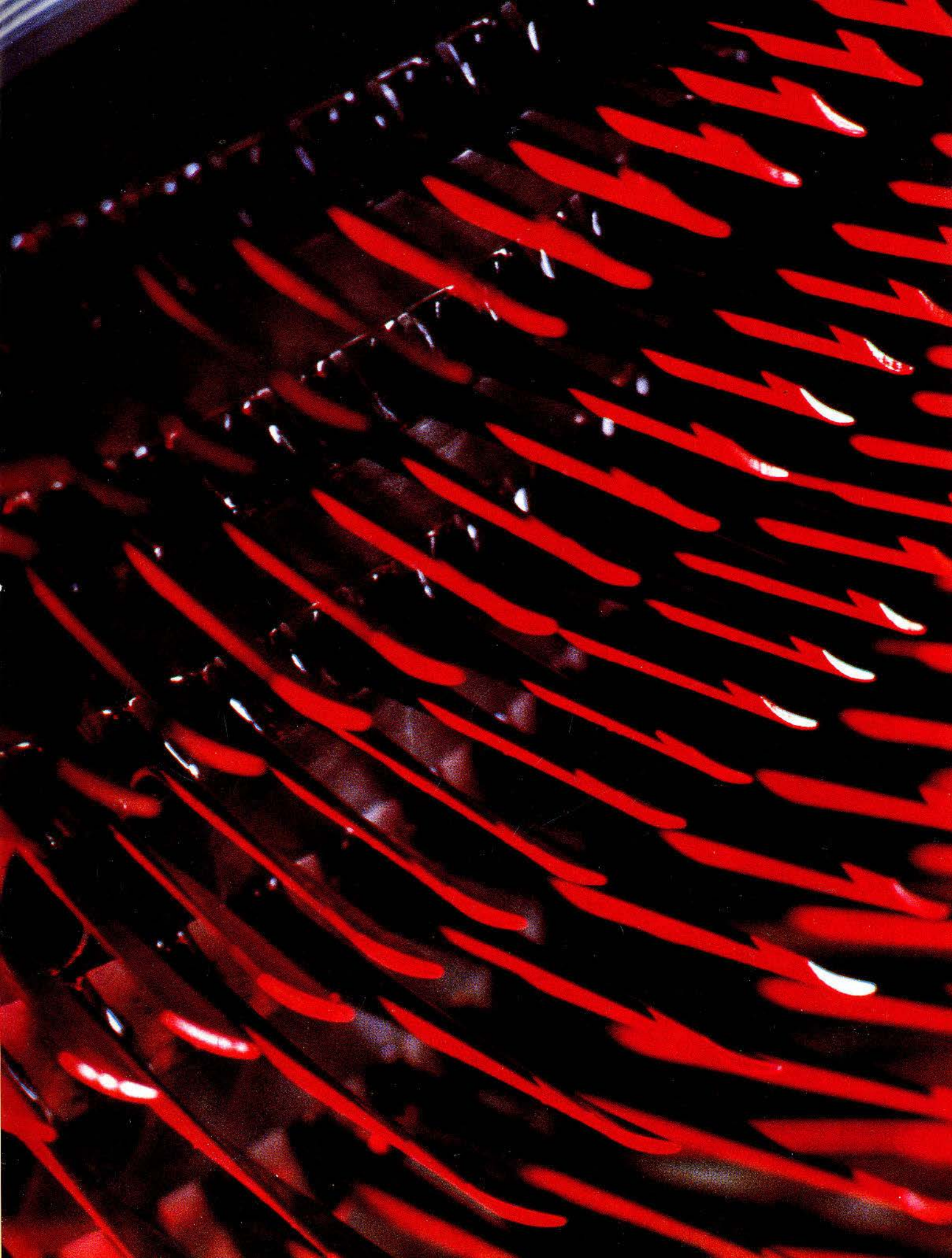


Fig. 2

deal of technological fallout is anticipated from all the studies involved in the five program elements.

From this rather summary outline of development trends in new technologies it is evident that they should be given due weight for the substantial impact they will have on the configuration and operational capability of the Armed Forces.

IMPACT OF THE EMERGING TECHNOLOGIES ON THE ARMED FORCES

As we might imagine, the importance of new technologies raises difficult and complex problems that go beyond the strictly military field to involve directly the political and industrial fields.

But since we wish to limit our study to the strictly military aspects, it should be clear at the outset that this concerns an overall involvement of the military organization. This is so because use of the emerging technologies in the development of new equipment for the modernization of operational units is not simply a matter involving research and development and procurement. It as a much more complex affair which has more or less immediate effects on personnel policy (the need for more specialists), on organization (creation of ad hoc units), on training, and on the doctrine regarding employment, tactics, and logistics. And all this without neglecting the financial aspect, which is virtually determining of technological choices. It is a matter of weighing available resources which in the interforce orbit necessarily impose closely calculated, well coordinated and integrated choices, so as to economize on efforts: this approach can produce weapon systems and materials in general in modular configurations, with spinoffs for different uses wherever the same basic technologies are utilized.

NEW TRENDS IN "MATERIAL POLICY":

- TO CONSOLIDATE THE INTERESTS OF INDUSTRY TO FOSTER THE GROWTH OF SYSTEMS FOR THE FORMATION OF GROUPS CAPABLE OF RESPONDING EFFECTIVELY TO THE NEEDS OF LAND FORCES.
- TO FOCUS ATTENTION AND FINANCIAL RESOURCES (APPROXIMATELY 20% INCREASE FROM 1985), PLANNING FOR THE 90's AND 2000's, DEVELOPING NATIONAL PROGRAMS AND SEEKING FULL PARTNERSHIP IN INTERNATIONAL COLLABORATIVE PROJECTS FEATURING HIGH TECHNOLOGY CONTENT AND SUBSTANTIAL INVESTMENTS.

The financial resources that can be applied to the introduction of high technology equipment are certainly insufficient to cover all identifiable demands. Choices are therefore necessary which conform to a strict cost/effectiveness criterion, bearing in mind all the parameters in play, development costs, procurement and maintenance and the danger of putting into service, at the end of the research and development cycle, material made obsolete by the superseding technological progress.

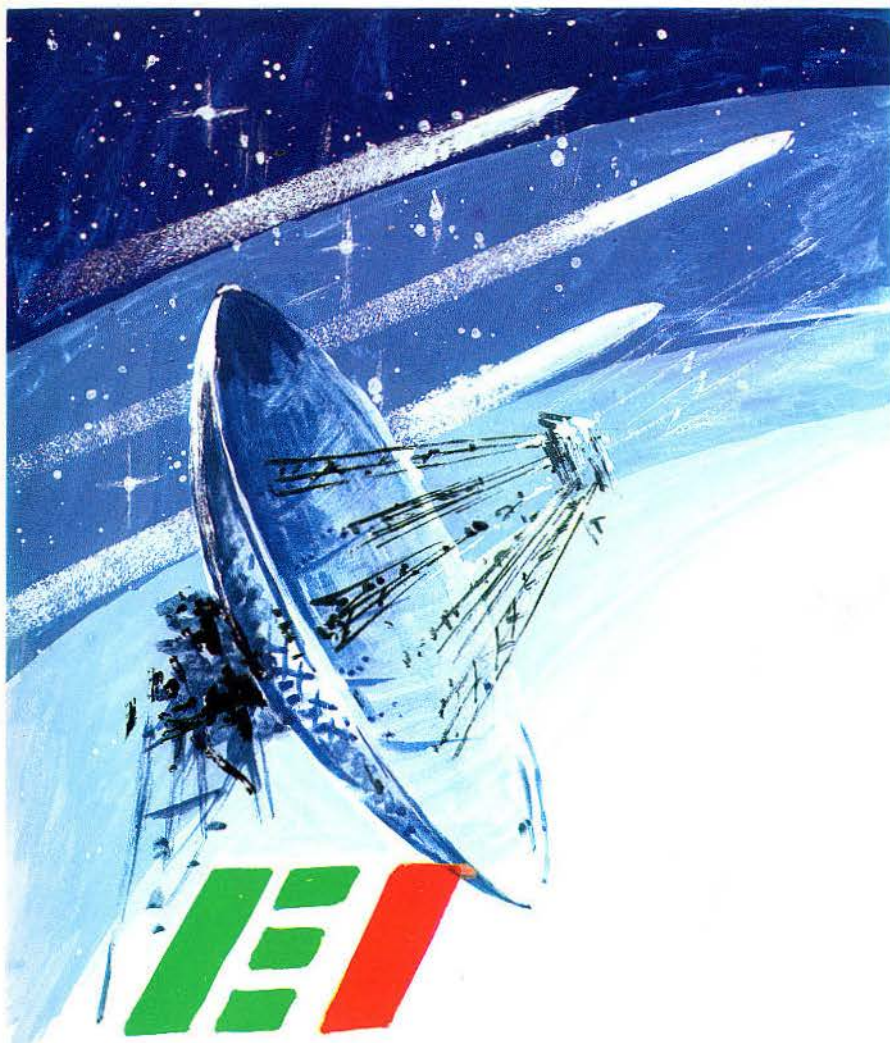
Given the financial investment framework outlined, the general trend at the moment, even in the international sphere, is to look for efficient international cooperation in addition to rigorous coordination in the interforce area, on the theory

that it is no longer possible to venture alone into activities of the kind, i.e., of high technology, which imposes an unbearable financial burden because of the limited, risky marketing opportunities in a fiercely competitive market.

The new technologies are in any event a reality and they present us with a challenge: a failure to face up to it means a failure to respond to the need for efficiency in the military establishment.

It is impossible to be unconcerned. As has already been said, it is necessary to avoid the crumbling of resources. That is why a clear definition of priorities on targets of high efficiency is required, in other words, on technological projects of satisfactory overall profitability.

Those who have little to work with must learn to make



the most of what they have, aiming for a high level of quality on the theory that it is more advantageous to have competitive products, even though in limited quantity, than many products of modest quality which preclude the development of systems that might prove decisive in an emergency.

This challenge demands a consistent and precisely aimed response, a consistent, balanced involvement of all the sectors mentioned, which we may synthesize into a useful triad: new material, new personnel, new doctrine.

In this complex process of responding to technological challenges, an important role is obviously entrusted to national industry. It must first of all look within for the right combinations, so that it may be strong and competitive and

have a fair chance in the ever-more aggressive international industrial marketplace. This is necessary to avoid being isolated and reduced to a simple passive support role relative to foreign industries. And the Armed Forces will have the additional task of stimulating and urging national industry towards higher quality and the acquisition of advanced know-how.

IMPACT ON THE MODERNIZATION PROGRAMS OF THE ARMY

The Service has moved in the direction of utilization of the new technologies, being concerned, like the other two Services, with being supplied — on time — with weapon systems that are competitive,

reliable, of acceptable cost, and provided with maintenance programs designed for the entire projected duration of their technical and operational life. In this perspective, through a revision in terms of feasibility of the goals to be pursued and on the basis of actual possibilities permitted by realistic budget allocations, it has prepared a Materials Policy, the guiding ideas behind which may be summarized as follows (fig. 2):

- to consolidate the activities of industries to promote the birth of systemic capabilities, in other words, of agreements relative to the formation of combinations able to undertake and resolve efficiently the requirements of the land forces;
- to devote greater attention and financial resources to the development sector in light of the goals of the '90s/2000s, developing national projects and seeking participation as full partners in international collaboration projects involving high level content and substantial financial investment.

To reach the goals laid out, various paths have been pursued, such as the presentation of complex problems by the highest levels of the Army to the highest levels of the concerned industries; the granting of contracts to industries for studies on technological and high level development projects; the involvement of industry experts in the activities of international working groups to let them obtain from the very beginning opportunities for effective participation in collaborative developments, on even terms and with proportionate advantages; the support of industrial organizations at the highest levels, for fair returns on international projects in terms of work and of know-how.

This occurred, for example, for the CATRIN system, where the formation of a suitable consortium to carry out the program with a systematic vision

was supported; for the anti-tank missile systems of medium and long range, 3rd generation, to permit an Italian participation as dignified as possible in the development and production program of the Tripartite Countries (FR, FRG, UK); for the national realization of a second generation tank, and still more for the study of a third generation tank, related to specific projects on high resistance armor, high performance engines, and on-board electronic optics — all of this to support the subsequent inclusion of Italy with equal rights and on equal terms in like international programs. With this objective in mind, various research and development projects have been initiated by the Army in the national area and in the international context.

Although this concerns projects designed for particular weapon systems, each of them uses a complex of technologies at different stages of maturity.

This is the case, to cite an example, of the third generation tank, which, having to face an extremely diversified threat in the 2000s (fig. 3), must have equally diversified capabilities rendered possible by use of various innovative technologies.

Certainly, with reference to the chief requirements laid down, we may note the following:

- as regards fire power, besides a traditional muzzle with the capability of firing projectiles with additional propulsion systems, the adoption of different systems is not ruled out — systems such as the missiles of diversified guidance (laser, beam rider, etc.), which are related to fire control systems that unite sophistication to ever increasing reliability factors;
- as regards mobility, the need is emphasized of possessing in this sector an ever stronger capability obtained through development of:
 - high performance engines, gas or turbine, of limited weight and size;

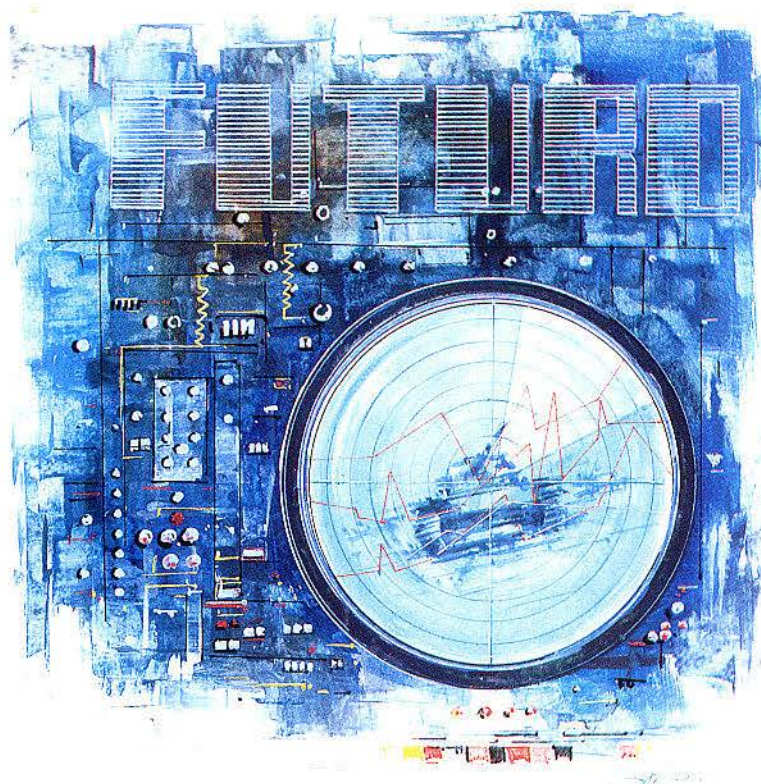
- transmission systems of reduced size, electronically controlled;
- new cooling systems;
- more reliable traction systems and bodies resistant also to NBC effects;
- for survivability, an ever more accurate balance between direct protection — to be achieved through use of advanced technologies with the combination of various materials (alloys, ceramics, mineral fibers), indirect protection (from thermal, radioactive, light, and other effects), and personnel security (compartmentation,

antideflagration and fire prevention systems).

Another example of a research and development project on which various innovative technologies have been working together is that concerning the anti-tank helicopter A-129 (fig. 4).

This is a complex weapon system produced in this country with the contribution of subsystems from allied countries with great technological traditions, such as the United States.

The different kinds of equipment are directed





THREATS

Fig. 3

HELICOPTER C/C A-129-LAH

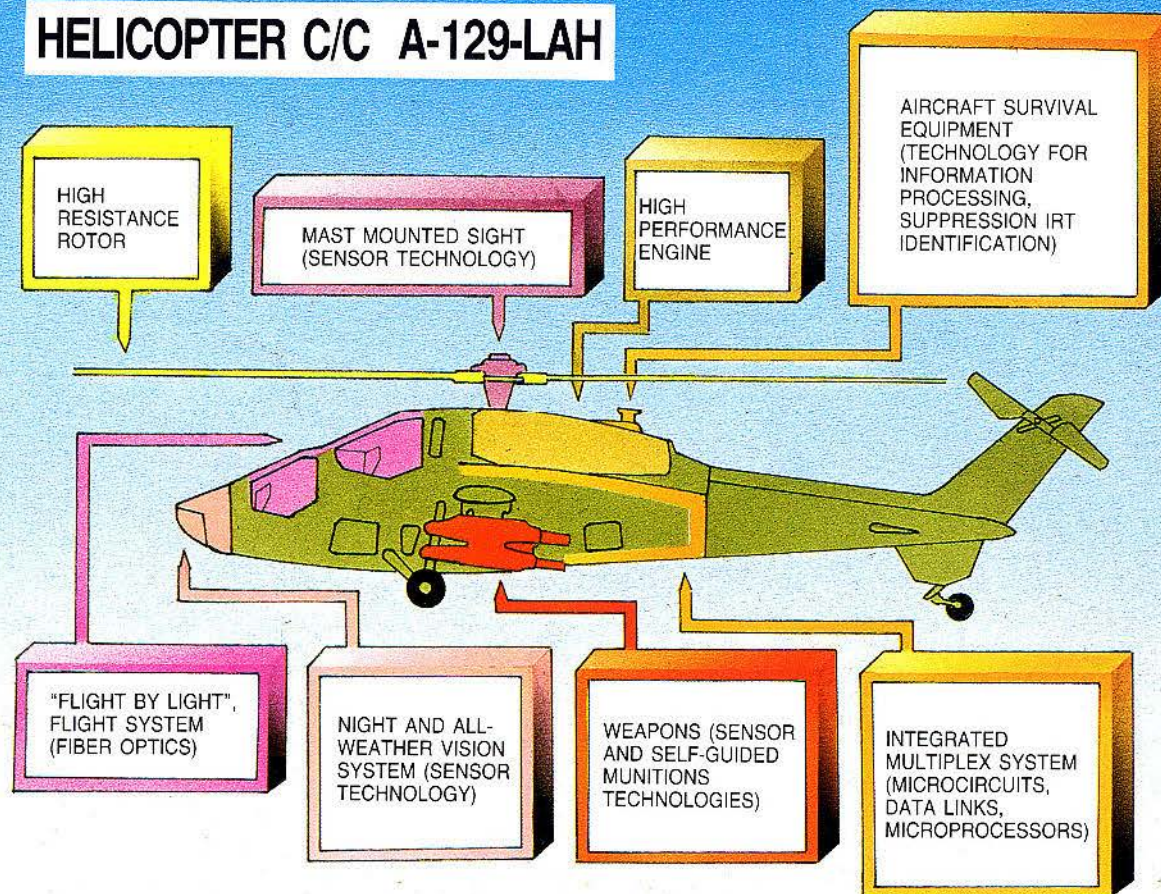


Fig. 4

automatically by a central computer over which man has operational control. This is a technical jewel which will be operational within the next year and will constitute a significant technological leap for the Army's light aviation. Other European countries are also showing more and more interest in this weapon system, from which advanced observation and combat support models can be derived. It is going to be the starting point for development of an even more advanced system (the A-129 LAH) in a collaborative effort among Italy, Great Britain, Holland, and Spain.

However, the most significant example of the importance of the new technologies may be seen without a doubt in CATRIN (fig. 5), which may be defined as a systems' system: it controls the use of a large part of the equipment in operation on the

battlefield and above all it regulates operational command and control action at the various levels.

This systems' system is designed to operate:

- with SORAO, to respond to requirements for observation of the battlefield and target selection up to 150 km beyond the line of contact;
- with SOATCC, to resolve the problem of control of the sky above one's own area by sighting in a timely fashion enemy air incursions against one's own troops, by simultaneously alerting these

The A-129 anti-tank helicopter constitutes a complex weapon system produced in this country with the contribution of subsystems from allied countries with great technological traditions.

troops, by activating anti-aircraft defense, and by safeguarding one's own aircraft from the action of the anti-aircraft defenses;

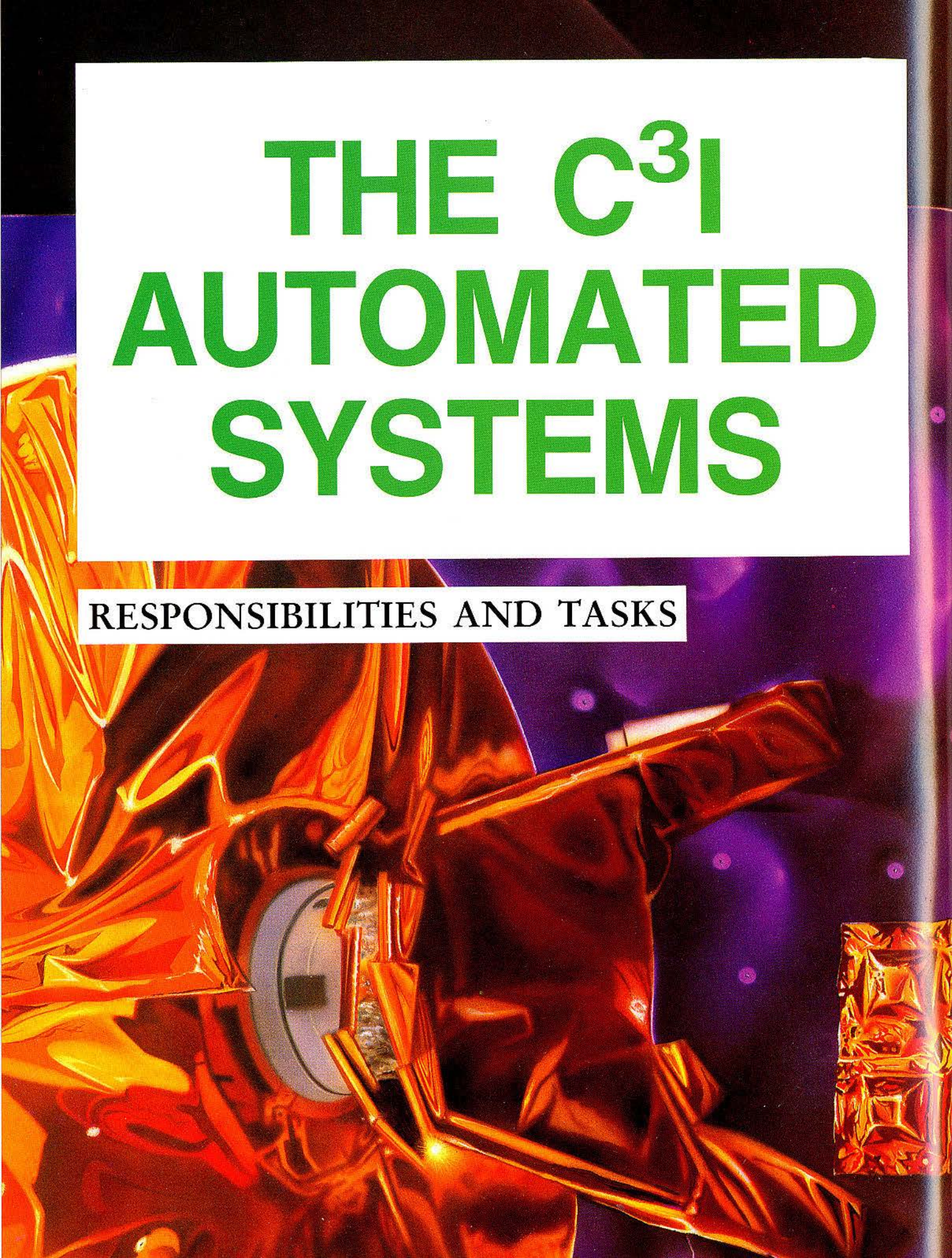
- with SOTRIN, to ensure modern and secure basic communications support of telephone, telegraph, data, facsimile, and television transmission, for the benefit of the command posts and various operational elements, wherever positioned in the battle area.

I will abstain from extending this study to the other programs under way, with no claim to have exhausted the field of potential impact of the emerging technologies, because they are present in practically every project of R&D, although in often less obvious ways.

I must however make clear that the emerging technologies used or of foreseeable use in the projects mentioned must be constantly followed in their

THE C³I AUTOMATED SYSTEMS

RESPONSIBILITIES AND TASKS



The Italian Army is undoubtedly making great strides towards a more and more widespread employment of **automation** in the exercise of the traditional functions of **Command and Control** of its forces, in order to carry out its tasks, both in peacetime and in emergencies.

it seems therefore appropriate to focus our attention on the current organizational structure in view of verifying its ability to harmoniously absorb the impact with this new reality, and to point out, where necessary, the relevant adaptations.

In other words, one is led to ask whether, in harmony with the gradual introduction of the new automated equipment, within the structure there are already the organs charged with the task of carrying out the

conceptual, organizational and executive activities, typical of the employment of any other means of the Service, or whether they must still be created, all or in part.

A concrete answer in this regard presupposes a long and careful analysis, which cannot certainly be accomplished in a simple article. Anyway we shall do our best to provide in short some cues, which we hope will be useful in view of a possible solution.

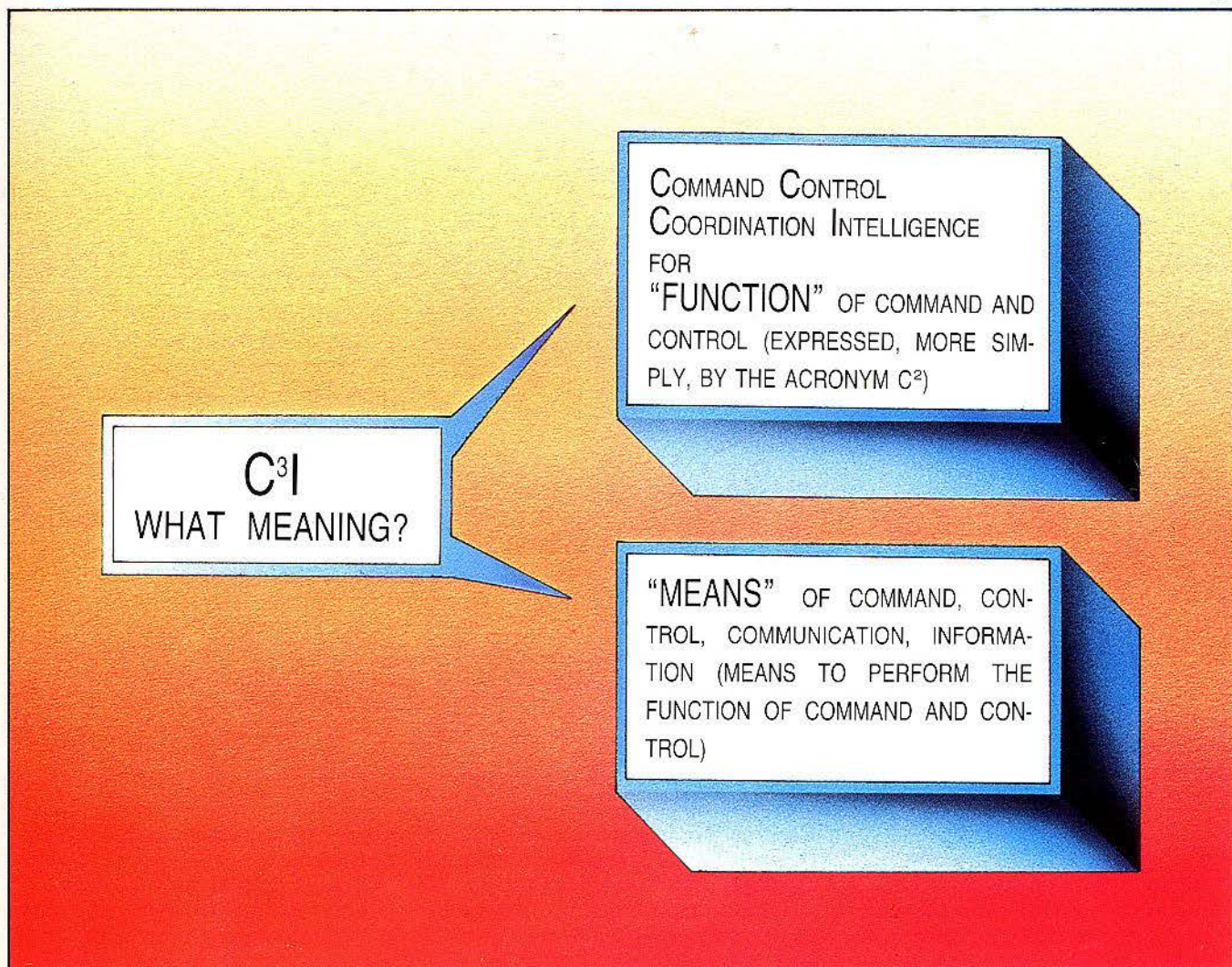
Before entering the specific subject, it will be appropriate to explain the current meaning of the C³I acronym which appears in the title and which lately has been given much space in NATO and national specialized reviews. We shall do this also with a view to evidencing the goals of the remarks that are going to follow.

C³I - THE MEANING (fig. 1)

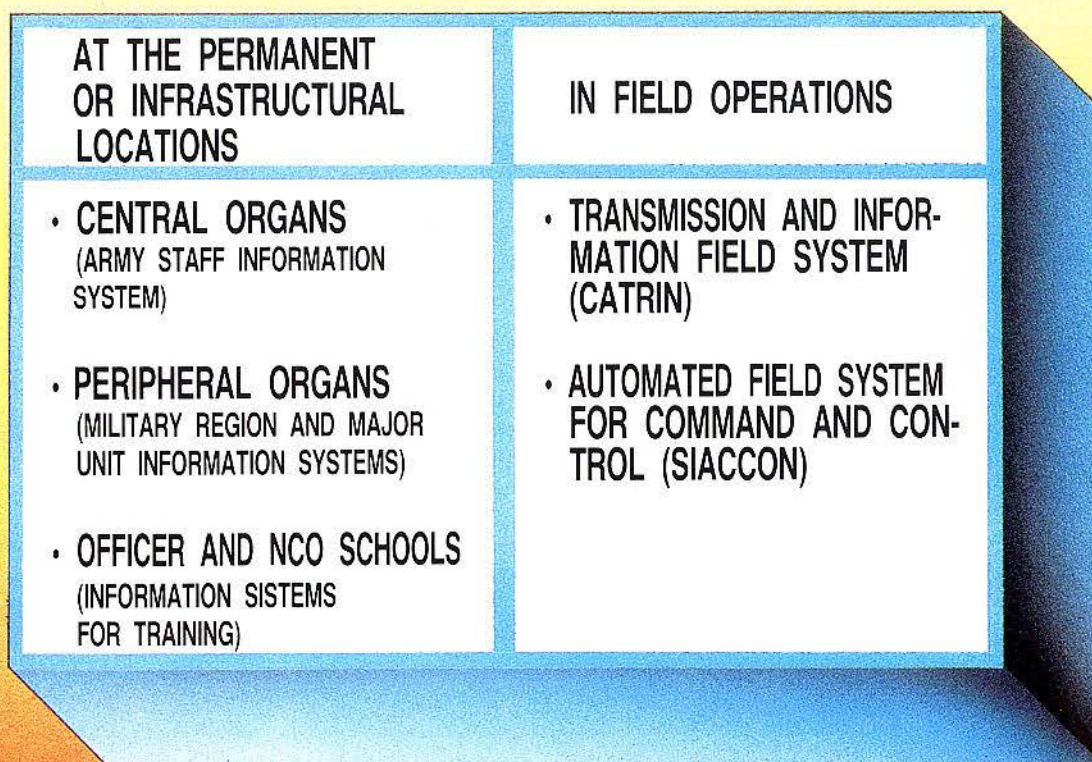
The first interpretation given to the acronym is that of "function" of Command and Control proper, typical of any Commander and his Staff. As such it could be expressed by the simple C² symbol; it acquires instead, the symbol C³I by adding to the initials of Command and Control those of two other words: C for Coordination and I for Intelligence.

This almost in order to formally enrich a symbol related to the "fundamental" function of Command always carried out by every Commander ever since he, as leader of organized groups, had to find information about the adversary and the environment, anticipate the moves of the adversary and

Fig. 1



AUTOMATION ACTIVITIES



decide his own, for the best employment of the available forces, in order to prevail.

But there is another interpretation of the C³I acronym, precisely the one that refers to the "Means" of Command, Control, Communications and Information which are used for carrying out the Function of Command and Control.

It is actually to this interpretation of C³I, to the means that express it, that we shall refer from now on. These are means which, within the Army, are increasingly turning towards a massive employment of methods and processes typical of informatics, as regards both the Central and Peripheral Organs in their permanent locations and the Major Units in field operations.

The subject of this article

stems from these considerations.

CURRENT AUTOMATION ACTIVITIES

We deem it neither necessary nor appropriate to enter into details here: we risk to depart from our basic subject.

Moreover, the matter has already been discussed in other articles of this magazine.

We shall just mention (fig. 2) that, as regards the sector of permanent or infrastructural locations, automation is under way in many installations of the **Central Organs** (the General Staff with its Data Processing Centres, the system of Office Automation, the computerized support elements for the administrative and logistic

sectors), the **Peripheral Organs** (Military Regions and Major Units in their permanent locations with their data-processing centres, the computerized support for peacetime administrative — logistic activities and the cooperation with Civil Defence) and the **Schools for Officers and NCOs** (Academy, School of Application, War College, NCO School, Service Schools: all are equipped with more and more widespread and updated informatic equipment). These realizations are in a phase of progressive interconnection, in order to accomplish a real "distributed informatics network" for Army use in peacetime.

As regards the field sector, it may suffice to mention that two large programmes are under way for the development of two

complex systems: CATRIN (Transmission and Information Field System) and SIACCON (Automated Field System for Command and Control of Major Unit Command Posts); both are conceived in particular to achieve an automated C³I support, on an emergency, for the Army Corps and for the Brigades. A support, naturally, capable to be integrated, at higher level, with the corresponding supports and to receive, at lower level, the support of the minor units.

TASKS AND RESPONSIBILITIES IN THE UTILIZATION OF THE C³I AUTOMATED SUPPORT

Here we hit directly the fundamental question. In order to find an answer we should make a distinction between the sector of the permanent or infrastructural locations and the field sector.

Next we shall then try to compare the requirements with the capabilities that will have emerged.

It is moreover necessary to channel the argument within a logic that takes into account the various parameters. In substance, these parameters concern the conceptual, organizational and executive activities for the installation, operative management and maintenance of the equipment.

Hence, it is appropriate to employ a "scheme" such as that at fig. 3, following which we shall try to find the answers.

PERMANENT OR INFRASTRUCTURAL LOCATIONS

In this sector the automation activities started several years ago.

There are therefore experience data, not all positive ones to be sure, but precious nevertheless, especially because they are connected with "pioneer" stages in the specific field, with multiple adaptation crises, related also to the very rapid evolution of the

REFERENCE SCHEME

Fig. 3

ACTIVITY	INSTALLATION	OPERATIONAL MANAGEMENT	LOGISTIC MANAGEMENT
CONCEPTUAL			
ORGANIZATIONAL			
EXECUTIVE			

PERMANENT OR INFRASTRUCTURAL LOCATIONS (PRESENT SITUATION)

Fig. 4

ACTIVITY	INSTALLATION	OPERATIONAL MANAGEMENT	LOGISTIC MANAGEMENT
CONCEPTUAL	FIRMS/DA	DA (GS) with concurrence of firms	1st level: DA 2nd level: DA 3rd level: DA 4th level: Firms
ORGANIZATIONAL	FIRMS/DA	DA (Cadres)	1st level: DA 2nd level: DA 3rd level: DA 4th level: Firms
EXECUTIVE	FIRMS	DA (Cadres)	1st level: DA 2nd level: DA 3rd level: DA 4th level: Firms

equipment itself. On the other hand, it must be pointed out that in Italy this impact has not been worse than in other developed

countries.

With reference to the "scheme" and to what has been accomplished (and with our subject in mind), one can

put forward the following considerations on what has been done (fig. 4).

Establishment:

- the conceptual and organizational work has been carried out, in cooperation, by civilian firms and the Defence Administration, with marked prevalence of the former;
- the executive activity has been carried out exclusively by civilian firms.

Operative management:

- the conceptual work has been done by military personnel of the General Staff with the concurrence of civilian firms;
- as regards the executive organization, various personnel have been employed: Officers and NCOs from various Services and logistic Corps, after the attendance of suitable courses, and conscript personnel with previous civilian experience in the particular field.

As far as **logistics** is concerned, in practice only two of the four traditional stages have been implemented:

- 1st stage, simple interventions for military operators;
- 4th stage, intervention of civilian firms.

The situation at present is, on the whole, still on these terms, although we are in a fluid phase that trends towards a greater engagement of the Defence Administration.

It is of course an anomalous situation vis-à-vis the standard that characterizes the other materials, even those which, due to their electronic analogy, are most similar to the informatics equipment: the communication means. These anomalies, caused by the already mentioned reasons and also present in other countries, could nevertheless be overcome by just observing what happens in the field of infrastructural communications.

In this light, the following steps (fig. 5) could be taken.

For the establishment

(where still necessary):

- increase the participation of the Defence Administration in the conceptual and organizational activity; the civilian firms should just

PERMANENT OR INFRASTRUCTURAL LOCATIONS (DESIRABLE SITUATION)

Fig. 5

ACTIVITY	INSTALLATION	OPERATIONAL MANAGEMENT	LOGISTIC MANAGEMENT
CONCEPTUAL	DA Firms concurrence	DA (GS) and Branch Cmds)	1st level: DA 2nd level: DA 3rd level: DA 4th level: DA
ORGANIZATIONAL	DA Firms concurrence	DA (Branch Cmds)	1st level: DA 2nd level: DA 3rd level: DA 4th level: Firms
EXECUTIVE	FIRMS	DA (Organic Unit)	1st level: DA 2nd level: DA 3rd level: DA 4th level: Firms

FIELD LOCATIONS

Fig. 6

ACTIVITY	INSTALLATION	OPERATIONAL MANAGEMENT	LOGISTIC MANAGEMENT
CONCEPTUAL	DA (GS)	DA (Branch Cmds)	1st level: DA 2nd level: DA 3rd level: DA 4th level: DA
ORGANIZATIONAL	DA (Branch Cmds)	DA (Branch Cmds)	1st level: DA 2nd level: DA 3rd level: DA 4th level: Firms
EXECUTIVE	DA (Organic Unit)	DA (Organic Units)	1st level: DA 2nd level: DA 3rd level: DA 4th level: Firms

concur;

- let the firms carry out the executive work.

For the operative

management:

- on the conceptual plane, resolutely emphasize the intervention of the General

Staffs and the Branch Commanders;

- on the executive plane: have recourse to well defined **organic units**, obtained by putting together the personnel already employed and introducing in the units new personnel after the attendance of specific courses.

As regards **logistics**, the Army should be progressively made self-reliant, at least up to the 3rd level, by preparing ad hoc military technicians to be destined to the already existing organs of the Defence Administration; which, in any case, should be properly organized and equipped.

In short, it is a matter of improving decisively the Service's operational and logistic capabilities in the informatics sectors. It is undoubtedly a hard task, which nevertheless must be tackled with courage and determination, if we do not want to continue indefinitely with expensive assistance contracts.

FIELD LOCATIONS

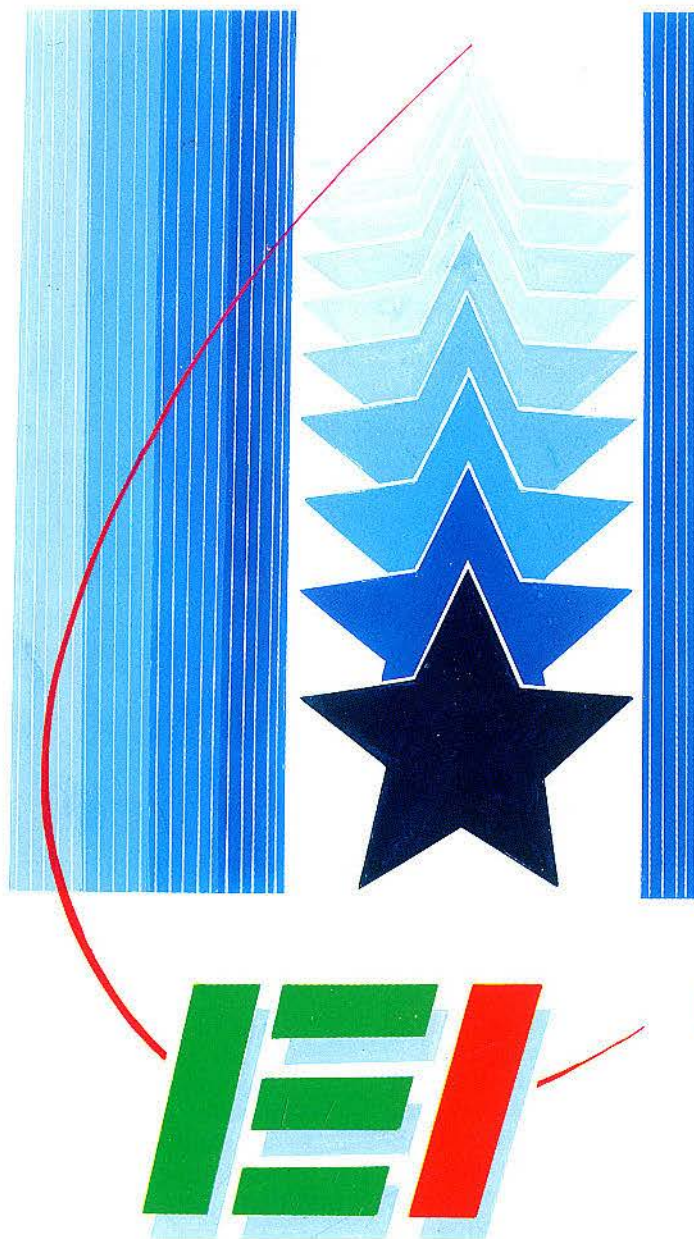
The matter regarding this sector is even more complicate. One can say, in fact, that, in this field, we are totally "new" to experiences of utilization of field informatics instruments.

There are only some experiences related to the employment of the so-called embedded field computers, i.e. computers that are part of some particular weapon systems.

But such an experience cannot be considered definitive as regards the employment of complex systems such as **CATRIN** and **SIACCON**.

Nevertheless, also in this instance, as we did for the infrastructural sector, we think it could be useful to refer to the sector of "communications" (field communications, this time).

Thus, having in mind the "field communication" we shall try to draw up the already mentioned "scheme of reference" for the employment of the **SIACCON**



and **CATRIN** systems in the area of an Army Corps (fig. 6).

For the installation of the systems:

- the conceptual activity will certainly be entrusted to the Staff of the Major Units (G3,

G2, cells of CASI = Centre for the Analysis and Selection of Information), each for the part in its domain, and to the Branch Commands;

- the organizational activity will have to be conducted by the mentioned Branch Commands, each for the part under its responsibility;

- the executive activity will have to be carried out by specific units, which, as regards **CATRIN**, could be the **SOTRIN**, **SORAO**, **SOATCC** battalions and, for **SIACCON**, groups of forces or units at battalion level, which will have to be constituted.

The Italian Army is resolute to rely on a more and more widespread employment of automation for the performance of the traditional functions of Command and Control of the forces at its disposal and for carrying out its tasks, both in peacetime and in emergencies.

The operational management will concern, again, at conceptual and organizational level, the General Staff and the Branch Commands.

At executive level, the units concerned will be those previously mentioned, including the new ones for **SIACCON**.

As regards **logistics**, it will be necessary to have the activities foreseen by doctrine flow together in the normal channel that characterizes all other materials. Therefore, for the 1st level, it will be necessary to envisage a minimum intervention (change of components following the automatic indication of breakdowns); for the 2nd level, a minimum intervention on modules and sub-modules; for the 3rd and 4th level, interventions similar to those envisaged for the other types of material.

NEW ORGANIZATIONAL UNITS OR ADAPTATION OF THE EXISTING ONES

We have tried to point out, in short, a possible answer to the question. Nevertheless, in drawing up a conclusion, we want to suggest also another consideration, as further contribution to the solution of one of the numerous problems confronting the Army as a consequence of the introduction of the new automated instruments for the performance of the "Command and Control" function.

We wish to refer, in particular, to the ways of tackling the problem of the creation, both for the "permanent locations" sector and for the field sector, of "specific organizational units" for the operational management of:

- infrastructural data processing equipment;
- **SIACCON** equipment.

The creation *ex nihilo* of such units could be avoided by entrusting the responsibilities described above to the signal battalions, both to those in



It is wise to verify whether in the organizational structure there are already the organs destined to carry out, in harmony with the progressive entry into service of the new automated equipment, the conceptual, organizational and executive activities which characterize the employment of any other means of the Service, or whether these organs must be created, all or in part.

support of the Central Organs and Military Regions and to the ones of complex Major Units. Nevertheless, it would be necessary to envisage appropriate adjustments in the battalions' personnel.

Our suggestion derives also from the observation of what is happening for similar activities in the civilian field and within some major structures of Military Commands, both in NATO and in the other Services. As a matter of fact, today we speak about a symbiosis between communications and

CHANGES IN TASKS-RESPONSIBILITIES-DENOMINATION OF THE SIGNAL CORPS

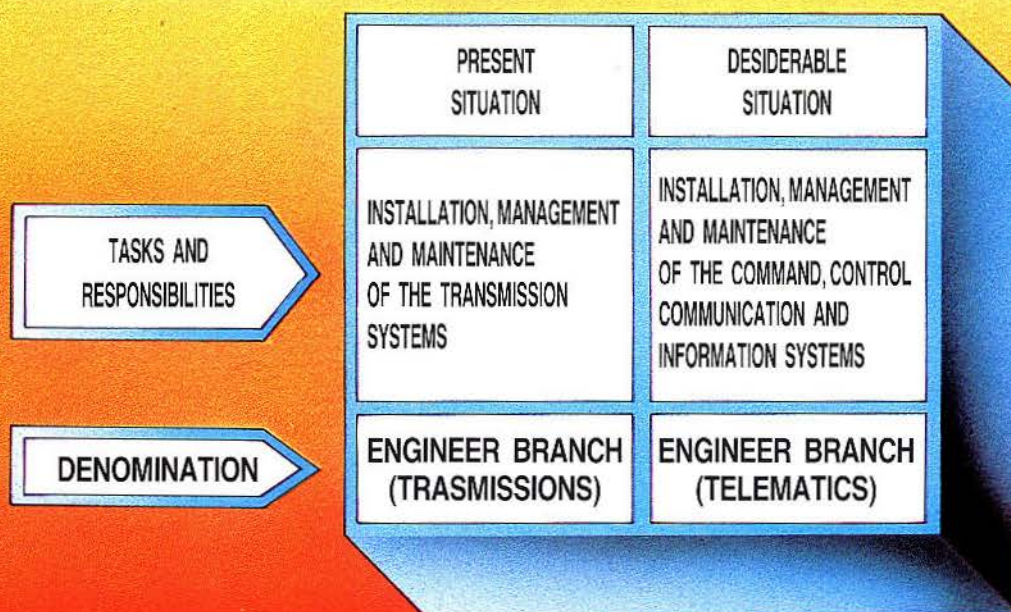


Fig. 7

informatics, and mention "Telematics" "T.E.I." (Transmissions, Electronics, Informatics), as well as Videotel or Televideo. What is meant, in short, is a "oneness" of "Communications and Informatics", also with the intent to eliminate the bouncing of responsibilities between those who realize the transmission lines and those who connect the data processing units to such lines.

The assignment of the tasks connected with the installation and operational management of the informatics equipment, and particularly of SIACCON, to the signal units, would also entail, as a natural consequence, the decision of changing the tasks and specific denomination of the Signal Corps.

SIGNAL CORPS OR TELEMATICS CORPS

The assignment of the tasks connected with the installation and operational management of the informatics equipment, and particularly of SIACCON, to the signal units, would also entail, as a natural consequence, the decision of changing the tasks and specific denomination of the Signal Corps.

For instance, it could be given the name of "Telematics Corps" (fig. 7) or "C³I Support", or "T.E.I. Support".

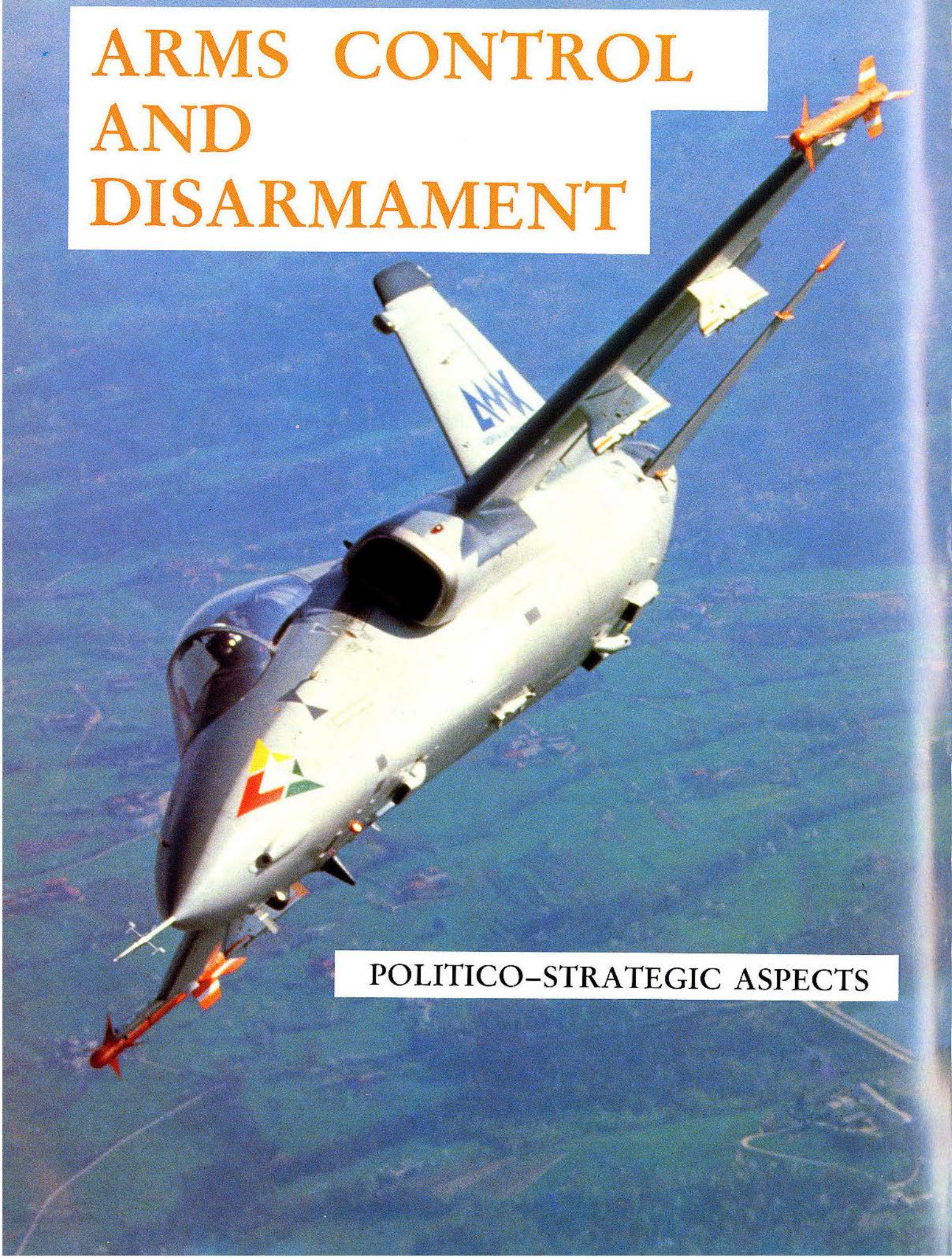
A need of this kind is not alien to other Armies, in countries even more advanced than ours. But as far as we know, none has taken a decision about the matter.

Italy (why not?) could set the example.

Brig. Gen. Luigi Campagna

THE C³I AUTOMATED SYSTEMS

ARMS CONTROL AND DISARMAMENT



POLITICO-STRATEGIC ASPECTS

There is widespread pessimism regarding the possibility of negotiations on arms control and disarmament leading to concrete results. During the period immediately after the Second World War this pessimism followed a cyclical pattern, in step with the level of confrontation and tension existing between the two superpowers. With the Soviet invasion of Afghanistan in 1979, we saw the close of the period of détente and peaceful coexistence which had begun in 1963 with the Cuban crisis, which had laid the groundwork for the great treaties of the Seventies on the control and limitation of arms and for the growth of trade between the East and West. However, it had also allowed the Soviet Union to be transformed from a continental, or even regional power, into a world power, equipped with a mighty navy and the strategic capability of projecting at great distance its military power. In the meantime, the equilibria among the forces in Europe also altered. The conventional superiority of the Warsaw Pact has grown: the number of armour and artillery of the Warsaw Pact has increased; the technology of the Soviet weapon systems has neared that of the West; the Warsaw Pact has graduated from a "steam roller" operational approach to attack to a conception typical of the "blitzkrieg" (1) and could swiftly overthrow NATO defences with a surprise attack mainly in the very delicate initial phase of their movements to assemble in the advanced defence positions. Meanwhile, the Western superiority in the theatre nuclear arms disappeared (2).

At global strategic level, a substantial balance came into being between the United

States and the Soviet Union, thus creating a stalemate. The credibility of "extended deterrence", that is, of the use of the central American deterrent in the event of a Soviet attack confined to Europe, has decreased. Extended deterrence always postulates a capacity of offence (3). France was unable to dissuade Hitler, first from occupying Austria and Czechoslovakia and then from attacking Poland, since it could not threaten German territory, as it was entrenched behind the Maginot Line. It is for this reason that the concept of "first use" of tactical nuclear weapons is central in the current NATO strategy. It does, however, presuppose a superiority (escalation dominance) and a controllability of a conflict which are extremely problematic.

The strategic picture is experiencing high instability owing to technological development. Globally speaking, the prospects for efficient active strategic defences (anti-intercontinental missile defences) are eroding the very conceptual bases of the doctrine of deterrence, based upon carrying out reprisals in case of enemy attack (4). With regard to the European theatre of operations, the extraordinary technological progress of conventional arms is creating for the West the possibility of compensating for the quantitative superiority of the Warsaw Pact, to date essentially balanced by the close integration between conventional defence and the theatre nuclear arms (5), with better quality. This superiority has so far been considered structural, and not merely conjunctural, for two main reasons. Firstly, owing to the rate of militarization in the Soviet society and economy (duration of service 24-36 months, 12-15% of the GNP dedicated to the Armed Forces in the Soviet Union, against 12-18 months of service and 2.5-5% of the GNP for military

budgets in the NATO countries), which cannot be equalled in the democratic countries of the West. Then, due to the geographical dissymmetries between NATO and the Warsaw Pact, which favour the latter. The Soviet bloc is territorially compact, and is therefore in a position to manoeuvre along internal lines, concentrating its forces on the principal axes of attack. NATO, on the contrary, is geographically segmented, not only between Europe and the United States, but also among the different European theatres. To manoeuvre its forces, it depends upon the free availability of the sea lines of communication, threatened by the Soviet submarine power. In the event of a surprise attack, NATO would not have the time to manoeuvre its own forces, given the speed of armoured operations and the lack of depth in the territories of the Western European countries.

For their part, negotiations on the control and limitation of arms and on disarmament have been dragging on for years with no apparent appreciable results. The concrete prospects of multilateral and balanced disarmament appear disappointing. This creates frustration in the public opinion of democratic countries. At times, proposals are put forward that the obstacles to multilateral disarmament be overcome by means of the unilateral disarmament of NATO. Nevertheless, such reactions, even if they are to be appreciated for the moral tension fostering them, do come across obstacles when faced with the reality of the international relations system, in which military strength is instrumental and therefore subordinate to the policies of the sovereign States forming it and pursuing different and often conflictual objectives. States do not arm themselves because of a perversion in taste, but to guarantee their own security against direct attacks

"AMX" aircraft.

Nations equip themselves with arms in order to guarantee their own security against direct attacks and to avoid coercion based on the use of force.



"Leopard" tank.

If a country pursues an aggressive policy, it may be discouraged from attacking only by a valid defence capability.

(deterrence, defence) and to avoid external coercions based on threats of the use of force. The basic problem to be solved for the keeping of peace is that of reducing political tensions and contrasts of interests among States. Military détente is not possible without preventive political détente. Arms control and negotiations on disarmament do not resolve this issue. One cannot ask them for what they cannot give. If a State pursues a deliberately aggressive policy, it may only be discouraged from attacking by a defence capacity, in other words by force, not by negotiations. The determination to use force if attacked, discourages aggressions. This is

what took place before the Second World War. Western appeasement accelerated the crisis and rendered it ungovernable. The usefulness of a military enterprise, i.e., the possible gains attainable with it, rapidly decreases until it is annulled in the face of a sound adversary security system (6). Indeed, defence is a type of insurance, which has one special feature with respect to normal insurance: the probability of an attack, of the harmful event one wishes to avoid, is as low as the level of defence — the premium paid, in other words — is high, and viceversa. Disarmament as an element separate from the level of security, rather than being a peace factor, could make conflicts and threats more probable. This type of disarmament would in fact render more useful, less hazardous and less costly a

military enterprise by others or effective in the potential state (7).

Relations among countries are not, however, only conflictual. Interdependences exist which determine common interests. The relationships between disarmament and political détente are not one-way. Arms control has a positive influence on political détente. Indeed, it may stem the "Hobbesian" spiralling of the arms race, avoid it being triggered off by misunderstandings regarding the significance of certain military measures (a nation provides itself with arms for the purpose of defence, but these military measures are understood as a threat by any counterpart who, in turn, arms itself); enables a balance of force to be achieved at lower costs and risks; reduces the probability of accidental war resulting from

error or misunderstanding; prevents possible conflicts from being uncontrollable; renders military operations more human. These latter objectives are pursued with the so-called "confidence measures". They constitute perhaps the most concrete aspects of negotiations on arms control and disarmament currently under way in the various international fora (8).

Out and out pessimism regarding the prospects of arms control is nevertheless unjustified. Some results have been achieved. Others are possible. It is a matter of looking at how they can be attained and here the reality of the international situation must necessarily be borne in mind. The policy of small steps is often more productive in the end than the policy proposing very ambitious, although in practice unachievable, goals.

Any sound prospect for success in the negotiations on arms control and disarmament is closely linked to the fact that they do not constitute a danger for international strategic balances. Arms control and disarmament ought, therefore, to be closely integrated with dissuasive and defensive strategy and must be subordinate to security requirements. In essence, they must be part of the security policy, or strategies to build this policy at a lower cost with fewer risks. Control and limitation of arms and disarmament should not be considered as ends in themselves, simply as means to an end. This is the only way in which they can influence the situation (9).

It ought to be said immediately that an assessment of the strategic balances, or of the relationships of strength and vulnerability, is extremely difficult. Indeed, not only do quantitative factors, such as the number of arms and men or the unit performance of the weapon systems, play a part, but qualitative factors (E. Luttwak calls them "the intangible

factors of war") (10) which consist in the ability of the commanding officers, in the unit's morale and training, in the quality of the doctrine, in geographic conditionings, etc., also have some bearing. If it is difficult to transform a technical input (number and performance of the arms) into an operational output (what, that is, such an "input" means from the military point of view), it is even more difficult to understand what that operational ability might represent from the politico-strategic outlook, in other words, which political goals it is in a position to accomplish, which after all is what counts and "arms control" must consider.

There is a very great technical difficulty in assessing the equilibrium of the forces and then going on to draw up agreements on control and limitation of arms. This difficulty cannot be underestimated if the problem is to be dealt with in all seriousness. It must be understood in all its various aspects.

DETENTE, SECURITY, LIMITATION OF ARMS AND DISARMAMENT

Any agreement in the sector of control and limitation of arms presupposes the existence of common interests and a corresponding political will to pursue them jointly. In this regard, it is clear that a certain dissymmetry exists between one State which tends to consolidate the "status quo" and another which aims at modifying it, even to redress its own real or presumed position of inferiority. The interests of the first will all lie in maintaining the existent equilibrium at the lowest social and economic cost possible. The second will aim at altering it either with an arms race, which cannot be sustained by the opponent for political, economic and social motives, or with negotiations geared toward achieving unilateral advantages.

The force of arms may not only be actually employed, i.e.

used in warfare proper, but it may also be simply a question of threat, the potential of using force either to impose one's own will on another State or to dissuade it from attacking (11). Deterrence, which consists in the ability to prevent the outbreak of a conflict, or, in the case of a conflict, to prevent its uncontrolled extension and escalation (intrawar deterrence), can be achieved in two ways. First: with the threat of reprisals (in other words, punishment) on the attacker's territory (pure deterrence or deterrence by punishment). This conception is at the basis of the current system of deterrence in regard to the central deterrents of the two superpowers (MAD = Mutual Assured Destruction) or the so-called dissuasion "from the weak to the strong", mainly elaborated in France at the time of the constitution of the "force de frappe". This entails anti-resource targeting or, as it was at one time less demurely called, "anti-city". Second: direct defence capability, to prevent the aggressor from achieving his goals, by defeating him on the field or, at least, to make him pay a high price, in excess of the presumable value of his objectives ("deterrence by denial" or "by defence" or "by warfighting capability") (12). The current NATO strategy of flexible response (which envisages a series of elements - direct defence, deliberate escalation with the selective and gradual use of tactical nuclear arms and the massive retaliation of the US strategic deterrent) is at one time a strategy of "pure" deterrence and of defence. In addition, since the US nuclear umbrella is there also to protect Europe, there is talk of "extended nuclear deterrence", accomplished with the deployment of the theatre nuclear weapons in Europe, with a view to using them in direct support to the conventional defences, and with the maintenance of a close link with the US central deterrent,



U.S. "Forrestal" aircraft carrier. Defence may be viewed as a type of insurance: thanks to it, the probability of an attack is as low as the level of defence is high.

so as to achieve, with the so-called "coupling", continuity of deterrence against any form of attack. With the installation of active strategic defences, this situation is destined to undergo far-reaching changes. Curiously enough, it is the very opponents of the Reagan programme for development of antimissile defences who have come out in support of pure deterrence, that is after all the eventuality of burning enemy cities to ashes. But this is one of the paradoxes intrinsic in every politico-strategic consideration. There are others, for instance the argument which claims one should be armed in order to avoid the use of arms, or that, in order to lend

credibility to deterrence, i.e. to avoid the outbreak of a conflict, war must be kept possible with various devices (one of them being the myth of the controllability of a nuclear conflict). Deterrence can only work with a certain strategic instability.

Paradoxically, peace has always been based upon maintaining a certain possibility of war. The link between war and peace is indissoluble. Equally so are the strategy and control of arms, security policy and disarmament. To talk of one and not the other constitutes a self-contradiction.

In an Alliance like the Atlantic one, the problem of assessing the balances is made even more complicate by the existence of geographical dissymmetries, both with the Warsaw Pact and among the different European NATO regions, and of differing

interests among the various member countries. The Soviet bloc is more monolithic, even if there are appreciable differences of perception and interests between the Soviet Union and the countries of its Central-Eastern European "empire".

It is natural that each bloc attempt to use the factors of vulnerability in the opposing bloc in order to lessen its cohesion and solidity. It is also inevitable that these differentiations, exalted by the difference of political regimes and freedom of expression, constitute "factors of power", or "components of vulnerability", according to the outlook of those evaluating them with a view to drafting a propaganda strategy or, if you prefer, a strategy for psychological warfare. In the negotiations on the control of arms and disarmament, rhetoric, propaganda and declaratory

ends are as important as logic and real proposals. This fact should lead to view any slogan, statement and peace plan with considerable caution, and to prefer secret diplomacy to widely broadcast forms, too easily used as instruments for propaganda.

International politics is not, of course, founded solely upon conflict and force. Détente, as the 1967 Harmel report states, is not incompatible with deterrence. War is not inevitable. It is not a given fact that the occurrence of a military imbalance automatically causes the outbreak of a conflict or the acceptance, on the part of the weaker country or bloc, of the wish of the stronger one. Meantime, there do exist interdependences which determine common interests. Then, the instruments of action employed by the States on the international scene are manifold. They are not merely military but also economic, cultural, ideological, diplomatic, etc.. Military instruments are always less efficient and more costly than others. So the States, even those which are determined to modify the situation in their own favour, generally tend to prefer non-military instruments. The use of military force has even often become a cause for the malfunctioning of the modern industrial civilizations. It is toward these leading communities of interests that arms control must be geared, purporting to avoid useless military conflicts and transferring competition among States, inevitable and, when all is said and done, productive for progress and internal solidarity, to other sectors.

On this point, arms control is favourably received in view of the fact that other factors — primarily economic and technological — are replacing the military ones as preferred instruments in the power policy of the States. Trade has replaced conquest. Economic interdependence has led to common interests, which in turn

constitute an objective restraint on the spiralling of political tensions, decreasing the probability of armed conflicts. Moreover, the appearance of arms for mass destruction has made conflicts far more dangerous and therefore less likely. It is even unthinkable that one nuclear country should deliberately take the initiative of an all-out conflict, similar to the first or second world war (13).

On the other hand, the role of a foreign policy of power, as an element for aggregation of internal consensus and consolidation of the power of the ruling classes in individual States, has noticeably decreased with respect to the past. The use of force commands far greater caution and has become more subtle and indirect, at least for the industrialized nations.

In essence, the chances for maintaining peace have increased enormously in comparison with to the past. The "positive" role of military force on the international scene has decreased likewise. Negotiations for disarmament and arms control, aimed at reducing the probability of war, enabling better management of the crisis and limitation of conflicts, consolidating dissuasion and decreasing social and financial costs for security, are functional in this evolution of the world's politico-strategic situation (14).

Added to the objective limits, which reduce the use and the traditional role of war in international politics, are the subjective limits, deriving from the alteration of the system of values in modern societies. Increasingly, the use of force is considered psychologically and morally unacceptable. Of course, this phenomenon is not new (15). It is a constant of the entire history of mankind. It does however assume different connotations in relation to different new factors.

First: the dangerous nature of modern arms, especially nuclear arms. In particular, they

have given rise to a barbarization of war and loss of the distinction between fighters and non-fighters, which was one of the greatest conquests of civilization. This dangerousness generates a decreased "moral" acceptance of war. Incidentally, this has resulted in an evolution of the traditional doctrine of the Catholic Church on just war, narrowing it down, on the one side to the single case of legitimate defence and extending it, on the other, towards the building of peace (16).

Second: the assertion in the West of individualistic values with respect to community values, typical of the pre-industrial farming civilizations. This has made not only deliberate recourse to arms increasingly less acceptable, but also those human and financial burdens which the maintenance of military apparatus entails.

Third: the lesser use of war. Damages and costs decrease its acceptability and use, as illustrated earlier.

Fourth: the extent of military expenditures which detract resources from other uses. Even if no greater in percentage terms than in the past with respect to national products, military spending appears an increasingly less tolerable "scandal", in that it is in competition with social spendings. Social spending, with the emergence of the modern "welfare states", has become an "end" rather than a "means". The use of a "means" expenditure for military purposes is thus increasingly contested.

Fifth: the arms race appears in contrast with the interest and moral obligation of the industrial countries to help the countries of the Third World. Disarmament and aid to developing countries are often placed in direct correlation. Disarmament ought to make available the resources necessary for development. This correlation can actually be



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demonstrated only a certain extent, in the light of the concrete experience and statistical results of the policies followed so far (17). However, the problem does exist, also because of the widespread belief in the existence of such a correlation.

Objective causes and subjective reasons have thus decreased the utility, the acceptability and the very legitimacy of the military force as a political tool. This sows the seeds both for a new conception of peace and war, and for a greater incisiveness of negotiations on the control and decrease of arms and on disarmament.

On the other hand, it should be considered that the results of the negotiations

conducted in innumerable international fora are disappointing only within certain limits. They have undoubtedly been of help in reducing:

- the probability of accidental war or war by error and also, albeit to a lesser extent, the possibility of surprise attacks;
- the role of military force in international relations, especially on our continent;
- the costs, at least within certain limits, of the arms race; the damage and suffering in the event of the outbreak of war and the obstacles for a rapid settlement of conflicts, whenever they should break out.

Before abandoning the route followed so far in order to pursue multilateral agreements aimed at stabilizing the existent situation, and embarking upon new ones, such as unilateral disarmament or renouncing some types of weapons, much thought must be given to the consequences which could arise.

The entreaties and worries expressed by the various

pacifist and antinuclear movements merit the greatest respect and consideration. They encourage the efforts to reach truly widespread and possibly complete disarmament. Vis-à-vis a counterpart who does not pursue the same objectives of stability and maintenance of the "status quo", they weaken any negotial power. Indeed, the potential enemy can be led to think he can achieve a position of superiority with neither concessions nor costs. Thus the subject matter itself for negotiations would cease to exist. This is an extremely delicate and controversial aspect. It gives a new picture of the whole doctrine of war and peace, which must contend with this reality.

Military force, during the period following the second world war, underwent a change of role and a decrease in utility and in acceptability. This change has, however, different connotations and varying degrees of intensity according to whether one refers to

the two superpowers, the average industrialized powers such as Italy, or the countries of the Third World.

For the superpowers, military force still represents a basic instrument and an essential, and at times privileged, component of foreign policy.

For the European countries, the role of the military component is far more reduced: generally it is confined simply to guaranteeing their own security. So it pursues solely negative goals (negative, of course, understood as value, not as objective or goal) and not positive, connected with the use of military force as an instrument with which to achieve certain national objectives and interests.

For the Third World countries, the role of military force holds connotations very similar to those it had at the time of the rising of the modern national States in Europe. Political and territorial instability, the search for a national identity and the characteristic of modernizing elite of the military class, increase the utility and acceptability of the instrumental use of armed conflicts. Naturally, the Third World's conflictuality also derives from the fact that the East-West confrontation has moved to the Third World, but this has increasingly become a matter which is, if not marginal, at least virtually negligible. The inability of the great powers to control the conflicts which break out in the Third World is extremely dangerous for the very stability of East-West relations (18). The greater probability of a direct confrontation between the two superpowers, in which Europe and our country would inevitably be involved, consists precisely in the danger of a gradual extension of a minor conflict breaking out in the Third World, activated by the mechanisms of vertical escalation of war violence and of the "horizontal" or

geographic spread of the war. Arms control and efforts for gradual disarmament cannot be limited to the East-West axis of confrontation, but must be extended to the North-South and South-South ones. The interdependence between nations has furthered the globalization of the security problems and consequently of the problems related to disarmament. Negotiations on the control and limitation of arms have so far mainly concerned NATO and the Warsaw Pact. They have overlooked the Third World, often instable and superarmed. This also goes for the Mediterranean, where stability is indispensable for our security.

In the near future, greater efforts must also be made toward reciprocal security and arms limitation agreements in the areas outside those of the great alliances of the northern hemisphere. The stability of reciprocal dissuasion in this area, accomplished or which can, in any event, be accomplished between NATO and the Warsaw Pact, renders recourse to a deliberate attack very unlikely. On the contrary, the mechanisms for the handling of the crises in the Third World leave much to be desired. The war between Iraq and Iran and the Middle East conflicts demonstrate this fact.

CONCLUDING REMARKS. CONSTITUTION OF AN ITALIAN ACDA

In essence, military force, despite having undergone alterations in utility and acceptability, together with a change of functions within the framework of international politics, has retained its own precise role: that of guaranteeing peace by means of the maintenance of the equilibrium of forces. A country such as ours, because of its economic and demographic importance and its geostrategic position would — inevitably — be involved in a world conflict

and therefore cannot hope to be able to guarantee its own independence with disarmed neutrality. Armed neutrality would be impossible because it is too costly. For Italy there is no solution other than to belong to a bloc; that is, to be part of the sphere of influence of one of the two superpowers and guarantee its own security within the ambit of an alliance.

We can give an important contribution in favour of détente and international disarmament, with a policy of proposals, perhaps more active and concrete than that followed to date. Nevertheless, our security policy and our participation in the negotiations on arms control and disarmament must bear in mind our limitations and conditioning. They preclude us from merely national routes and oblige us to position our action within the framework of the broadest interests and guidelines of the Atlantic Alliance and Western Europe. However, this must not prevent us from protecting, in a more efficient fashion than has been the case so far, our national interests and our vision of the international order.

Within this framework, it seems that the positive effects that protection of national dignity in external relations would have on the consolidation of the national sense of identity, are not to be overlooked. Such a need becomes increasingly imperative. In many ways, the national sense of identity is the precondition for a new national reconstruction. Foreign policy and military policy, and in relation to the latter, disarmament and arms control policies, must be less provincial in Italy and should pursue wider interests, different from those connected to simple considerations of internal political struggle. In short, it is a question of looking at Italy as a proper subject of international policy, with a precise vision of the world, of its own future, and its own interests

within the framework of the system of international relations.

To this end, the issues concerning the institutional structures for national security and the management of crises must first be resolved. The problem goes far beyond anything dealt with here and concerns the globality of the Italian foreign and military policy.

An appropriate organization of the national policy could see the birth of a body such as the American NSC (National Security Council) or the French Secrétariat Général de la Défense Nationale, situated within the ambit of the Prime Minister's Office, and, for the specific issue of disarmament, with the constitution of a type of ACDA (Arms Control and Disarmament Agency), within the NSC or as an organ in itself. Both institutions would work on studies and the preparation of proposals, make wide use of the work of external scholars and experts and realize the necessary interministerial coordination.

The constitution of an Italian ACDA, beyond the realm of the individual Ministries, could, by putting forward proposals and suggesting initiatives, also benefit the prestige of our country abroad and bring order to a sector which, in the current state, is found to be somewhat ungovernable.

A national approach to the questions of security and disarmament does not entail any slowing down of our links with Europe and the Atlantic Alliance, matrices of our international position. Rather, it should reinforce them. A country cannot participate fully in a community which is not able to defend its own interests with a reasonable level of dignity.

The national dimension is the only one in which the Italian voice might have some possibility of affirmation, given our specific weight on the international scene. The Italian situation is completely different

from that of the Federal Republic of Germany, where a "nationalization" of security would inevitably assume neutralistic shades, with a view to solving the problem of the division of the German nation into two separate states.

Nonetheless, the "forward flights" and dissertations on the "maximum systems" must be forgone and we must be capable of streamlining our action to a more regional or even provincial context. Proposals which, if limited to the great problems of world strategic balances, would be entirely platonic and of little use. Far greater bearing, however, could be exercised by those initiatives which on the one hand, would affect the area of direct strategic interest to us, i.e. the Balkans and the Mediterranean basin and, on the other, be supported by the coordinated use of economic instruments such as a policy for tax concessions, cooperation to development, technology transfers and for the provision of skills in production or planning.

Maj. Gen. Carlo Jean

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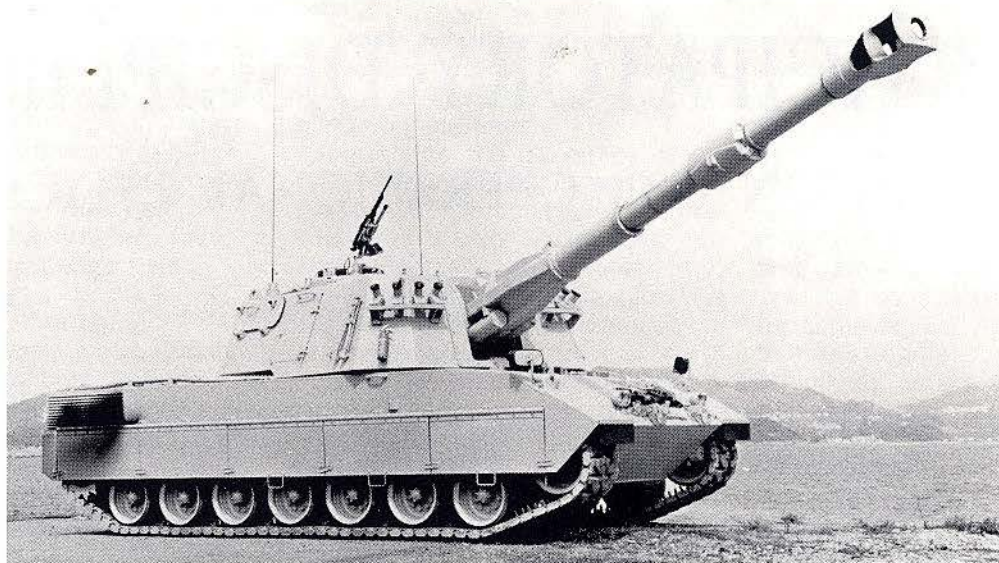
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During the second half of 1986, the general public was made increasingly aware of the military problems in our country; the inadequacy of military structures was brought to light, not so much in regard to defence requirements, but with respect to the young men who temporarily form part of the Army whilst fulfilling their military service obligations.

The analysis of the situation was thoroughly conducted by the institutional Organs, with a contribution from the information Organisms most involved. It pinpointed those structures most in need of intervention, presuming that the reasons for the reported inadequacy may all be traced back to the conditions in which military life unfolds and the ability of the young men to adapt to them. This presupposition is certainly valid and has enabled the provisions aimed at eliminating or reducing the disadvantages to be identified. The greater investigation capacity of the Selection Boards will allow psychologically unfit persons to be exempted from military service, further attention to army personnel will enable needs for psychological help to be met, the provisions aimed at promoting socialization among the young in military service and with the surrounding civil world, will make the break from the family and customary environment less harsh, and lastly, modifications in infrastructure will make our barracks more liveable.

It seems to me, nevertheless, that restricting the reasons for insufficiency to these material and psychological aspects alone is too narrow an approach and overlooks one of the aspects which, although it cannot be identified within the pathological framework like those mentioned, is among those most pertinent to the working of the military instrument. I am referring to the relationship existing between the generality of the military

(conscripts and otherwise) and the military organization: a relationship which unfolds in day-to-day events and more so in training which, in peacetime, is one of the basic activities of a military organism.

Ascertaining the adequacy of this relationship in regard to the actual characteristics of the young, is a duty which one cannot neglect; but an even more imperative duty is the ascertainment of the adequacy of this relationship for the purpose of which the military institution exists, namely, the technical efficiency of the military instrument. This must be constantly monitored, since society, not unlike technology and military techniques, is in continual development. In other words, what was valid yesterday may not fulfill the needs of today, in the rapidly evolving world in which we live.

It does not, therefore, appear out of place, as an appendix to what has been said, with full authority as a sound diagnosis and therapy for the situation of the young in the Army, to examine the relationship in question.

It is inspired by law 382 of 1978 on the principles of military discipline which, in article 4, states that each soldier fulfills his duties with a sense of responsibility and conscious participation.

Thus each soldier acquires the dignity of participating collaborator, leaving aside the old and now obsolete figure of the mostly passive executor of orders.

The same concept stresses the Regulation of Discipline which recently came into force.

What is the concrete application of this relationship? Is the participatory concept achieved in the hierarchic relationship and in the everyday military activities? A reply to the question requires preliminary analysis of the indispensable conditions for the development of this type of relationship.

These conditions concern both those in command and

those who should collaborate with the commanding officers (i.e. their subordinates).

Let's begin with the commanding officers, from those at the lower levels, i.e. those who are the main figures in the relationship with the soldiers: captains, lieutenants, second lieutenants, sergeant majors and sergeants, corporals and lance-corporals.

The conditions which must be achieved with these men so that the relationship may be effectively established concern: their professional training, the opening of the human relationship and a certain willingness to listen, self-confidence and lack of fear of losing authority.

Almost speculatively, participation may be exercised by dependents if they trust whoever is in command, if they are aware of their own rights but also of their duties, and if, lastly, they have the training which enables them to contribute to the solution of problems.

Many words are not necessary to establish that these conditions are found in a minority of cases: however, they do form the goal, the finishing post of a formative educational process aimed at putting both commanding officers and privates in the above conditions.

Nor should it seem unthinkable or too arduous a goal. In reality, the young commanding officers of today seem far more open to the human relationship than those of yesterday. Not only this, but their subordinates are far better educated and informed and largely more able to acquire awareness of their duties.

The percentage of high school graduates is very high among the young on military service, even if there is still some illiteracy.

This makes the route towards the goal of participation easier: a goal which must necessarily be

pursued since today any other way of commanding is inconceivable. In fact, think of how the working environment, armaments and war means have changed over the last thirty years, not to mention the human, political and social characteristics of the components of military organisms.

The action of a unit, a rifle company for instance:

- takes places in areas which cannot be directly and fully seen by the commanding officer whose orders, therefore, cannot be instantly and steadily received by each member of the division;
- is a result of the coordination of the actions of many elements, each acting with specific means and procedures;
- develops in a situation in continuous and rather more rapid evolution than in the past.

How would it be possible for the commanding officer of this unit to achieve efficient action if he were to trust merely to the executory ability of his subordinates and not, on the other hand, also and I would say above all, the aptitude of each one of them to decide to act independently, even in the flow of orders received, appealing to that participative spirit which we are discussing?

And even if it were possible for the commanding officer to govern the situation constantly and with precision, what acceptance could he expect from his subordinates, since these latter citizens are far more intolerant of authoritarian discipline than those of several decades ago? If the answers to these questions are taken for granted, implicit in the question itself, the problem for anyone who has to promote the general advent of such a commanding relationship consists in the search for ways to set it up as *habitus* in everyday life and in training.

A rule which seems fundamental in educating people in participation is that any activity whatsoever, even if of lesser importance, must be



viewed as a rational act resulting from the solution of a problem of action.

Anyone dealing with a problem of action must firstly understand the situation, have a clear vision of the task, know which means and how much time he has available, in which area of responsibility to move.

Our officers are educated in handling action this way and we are aiming to educate the young noncommissioned officers accordingly.

It is a question of extending this education to the young in military service. Is it possible in less than twelve months to achieve satisfying results? I would say so, provided one follows with conviction a method based upon a few rules to be applied with perseverance at all times,

in the barracks and primarily during training.

The first rule is that of information: the soldiers must be informed as much as possible not only in regard to the situation concerning the specific activity to be performed, but also in regard to the more general aspect of the military organization to which one's own unit belongs. This need must be satisfied by the commanding officer at all levels with tireless action and with all the means that the information technique makes available. This need, gradually but swiftly, must become a conscious need of all, so that the commanding officer's action is soon met with an active echo in all his dependents.

The second rule is that of the allocation to each soldier of

a specific field of competence, and therefore of responsibility, for each task to be performed. More often than not, the lack of clarity in defining duties favours absenteeism, disengagement, concealment, "shirking" and the consequent overloading with responsibility of the willing.

A general outline of the area of competence is defined by regulations, but it is imperative that each concrete act integrate this definition with further details in order to cover for shortcomings in the system, specific needs of the moment, the particular nature of the task.

The third rule is that of the clear explanation of what one wishes to achieve (task), of the means available for action and deadline for completion of the task.

A field in which the method described may be well applied is that of training.

As early as possible, the young men must actively take part in training through the application of the three stated rules of information, area of competence, indication of training goals, plus means and time available for their attainment.

In the French Army this process is adopted under the name of *Processus des Missions Globales*.

In 1979, the General Staff of the French Army, having noticed that interest among the young in defence problems had decreased, that the young felt the need to know the significance of what they were called upon to do and to participate in the conception of actions they were to undertake, developed and adopted a method which urged the participation of the young, calling upon them, according to an active pedagogy, to collaborate in a group with their instructor to achieve a series of training objectives; in other words, a method which turned each soldier into the creator of his own training.

All this, in line with the evolution of modern combat which it is felt must be conducted by strongly motivated men who understand the significance of the tasks entrusted to them, who are capable of acting in small groups and embarking, even independently, upon the most appropriate course of action.

The series of steps in this method is as follows:

- the definition of the training objectives to be pursued in order to achieve the end goal set by the battalion commanding officer. This definition results from the joint test that the company commander conducts with his second in commands and during the course of which the times and means are established, and the obstacles to be overcome are taken into account;
- the development of the "global mission" by each second in command responsible for the attainment of the training goal. This officer is free in the choice of training pathways and procedures and prepares to achieve his objective (goal materialized by the passing of a final test) encouraging his men to participate, right from the conceptual and organizational stage of training, in the construction of the scenario towards which all the training is to be geared;
- the allocation to each participant or group of participants in training of the role of competence, translated into knowledge and ability to learn individually;
- the acquisition, by each member, of know-how and the established abilities and the way of using them for the purpose of common action;
- the general action within which each person performs the role assigned to him, coordinating it with that of the others;
- the operational test with which the company commander checks whether the objective

has been achieved.

It is evident that such a sequence of acts refers, in the first instance, to advanced tactical training (in our language: 2nd and 3rd cycle training), but I believe that the guidelines can also be applied to elementary training (i.e. that of the 1st cycle) with recruits.

If this were to be done, the young men would be involved right from their very first day in military learning, being called upon to collaborate with the instructors in the choice of daily objectives, means, materials and training methods with conscious participation in the use of environments, means and materials of common use.

What has been said may seem utopic. I do not believe so. In every case, those who have the responsibility not only of conducting training in the Army, but primarily of seeking out feasible answers for the improvement of training methods and techniques, must not neglect the exploration of this road which has already been trodden with success by others.

The basic problem is that of the Staff of instructors: they must be trained and prepared with a view to this participation. The Military Academy and the School of Application who pass around 200 Officers per year, the Viterbo School for noncommissioned Officers which prepares around 500 Sergeants per course, a good number of whom are destined for command duties, the Branch Schools which train around 3000 reserve Officers who each year see service in first appointments, are the preparation grounds for the formation of this type of instructor-commander.

The possibility exists therefore. Willingness to advance and intelligence to work out the pathway are needed. Both qualities are not lacking in the good Officers on our general staff.

Lt. Gen. Neri Loi

CULTURAL ENTROPY DOCTRINE AND TRAINING



When a writer takes his title from beyond the domain of ordinary language, or borrows terminology and concepts from disciplines normally distinct from his own professional sphere, he is called upon to furnish an ample introduction. As one who is much involved with the printed word and appreciates its importance, I have, over the years, become firmly convinced that writing is an increasingly difficult art. The reasons for this lie both in the spreading of different and less taxing means of communication, and in the progressive corruption of language brought about by the liberties taken and the idiomatic schematizations imposed by the mass media. An author who is not writing for himself alone must therefore not only avoid boring his readers, but also arouse their interest. He must provide a "pondered" synthesis of problems and situations common to the majority of those readers if he is to assist them in their thinking and the practice of their professions. It does not therefore seem superfluous for our introduction to deal also with the term "culture".

The word "culture" has been semantically stretched, especially during recent years, by the priority it has been given over a multitude of other nouns. Hence the inevitable and nagging question: what is culture in this sense? The doubt and uncertainty that assail us when, for example, we are required to fill out a personal assessment form and write "broad and substantial" in the space provided for "culture" make at least 70% of the other items appear pointless or repetitive. Specifications of the term "culture" are, in fact, limiting. By military "culture", for example, most people understand solely the possession of a greater or lesser knowledge of the field, whereas culture is, in fact, a force which actively enriches the profession and rejects any sectorial or hierarchical

approach. For those with patience, perseverance and curiosity, it arrives after a stage which could, to borrow a term from physics, be defined as the critical mass of knowledge. What then takes place is a sort of explosion, with chain reactions directed towards the goal of interdisciplinary activity. An indication of the proximity of this phase is the instinctive channelling of attention towards sectors apparently unconnected with one's profession or normal sphere of interests.

It thus happens, for example, that the study of the physiology of the human body affords spontaneous insight into conceptual analogies of form and function with all other types of organism. The function of antibodies can thus be seen as the spontaneous activation of the internal mechanisms of any organization — political, military or social — to react in the most effective and economical way to external aggression. Moreover, to anticipate a theme developed below, for the same reasons it appears easy to understand, even in the absence of prior analyses of inborn patterns of behaviour, how certain actions laid down in our regulations are frequently hard to perform in practice or, at least, require considerable expenditure of time and energy.

CULTURAL ENTROPY

Before proceeding with the necessary elucidation of this concept, which is borrowed from the second law of thermodynamics, it would be as well to point out a fact in apparent contradiction with the

The concept of entropy, which is borrowed from the second law of thermodynamics, may, with some stretching, be extended to culture, since this is the integrative heritage of the individual and the species and thus participates in all their transformations.

remarks made above. Culture is not necessarily a factor of progress. It can even lead to immobility and, since this is not permitted by nature, to regression.

It is by now established that culture, as an attribute not only of the individual but also of the community, plays a part in so-called determinism by participating in the evolutionary process of the species (phylogenesis). It happens, in short, that the gene, i.e. the factor which records the evolutionary process and makes it possible, is acted upon not only by the product of individual characteristics but also by environmental features, as long as they are sufficiently active as regards intensity, duration and moment of impact. As a participant in the evolutionary process, culture is therefore a factor of progress only when in possession of the necessary vitality and dynamism. Otherwise it may lead to an arrest of evolution.

This concept can best be illustrated with the aid of the above mentioned second law of thermodynamics, which postulates the increase of entropy — the quota of degraded energy no longer available for further changes — in transformations taking place within isolated systems. The concept of entropy can, with a little stretching, be extended to culture since this forms the integrative heritage of the individual and the species and thus is involved in all their transformations. At this point it becomes painfully clear that the subject will have to be discussed in greater depth, if only for the sake of increased clarity and simplicity.

The essential condition for the accumulation and transmission of knowledge in living creatures is the creation of structures as constant as possible in form, i.e. a sort of supporting framework. However, each vital increase in knowledge involves the demolition and rebuilding, at



least in part, of this framework. This seems fairly clear and logical. The complications arise, however, when the frameworks represent not only individual knowledge but also that of society: i.e. when they constitute what is known as traditional culture. In this case any attempt at demolition, whether aimed at subsequent development or merely at keeping up to date, will clash with habit and tradition, and produce hostility or, at least, uneasiness, and will therefore be strenuously opposed. In other words, both the individual and the community are always reluctant, as our daily experience in all spheres confirms, to abandon frameworks considered valid for the preservation and accumulation of traditional knowledge.

Previously established forms are all the more hostile towards development when linked to emotional factors connected with love and/or respect for ideologies or even simply for those who have passed on knowledge and models of behaviour (parents, teachers, commanding officers, etc.). At this point we are faced with the state which Lorenz has described as "cultural invariance", the origin of evolutionary arrest. A pathological development of this is the attitude of near veneration towards the source of knowledge, which leads to increasing rigidity in the supporting framework and therefore resistance to any innovatory development.

Let us, however, now return to our simile. Development, i.e. objective enrichment, takes place in ever-changing contexts

— internal for the individual and external for society — and thus presents successive stages of development. Transition from one stage to another will require the expenditure of energy coupled with the inevitable accumulation of entropy (the system is isolated), which is no longer available for the purposes of progress (dogmatic attitudes, traditions, habits...). This is inevitable. Culture evolves with the individual and collective organisms and develops above all during youth, i.e. during a period of exploration, when there is a readiness to accept the high costs involved in relinquishing traditional factors as regards ties, feelings and institutions. The inevitable diminution of energies and aggressiveness with the passing of time then leads towards

stabilized situations linked to upbringing and environmental background, or even to memory alone. This entropy or cultural invariance, which finds its best known expression in "ideologies, religions, philosophies and theories, can, without exaggeration, be held responsible for the greatest disasters suffered by mankind: religious wars, racism and every other form of arrogance and perversion brought about by intolerance.

This long and arduous dissertation on culture — arduous above all in its quest for clarity and simplicity — is justified not only by its desire to tackle a subject which, though commonly spoken of, is little understood, but also by the fact that it provides the most suitable introduction to the second term referred to in the title of this article: doctrine.

DOCTRINE

As doctrine is the traditional domain of the establishment, to speak of it in critical terms generally arouses hostility and resentment, or at least doubt and suspicion. Let us, however, see what can be suggested by the objective features of evolutionary development. Every structure, like every other creation, be it literary, artistic, philosophical or scientific, differs from the others and establishes itself when it corresponds more fully than its rivals to the objective features of the developmental environment. Possession of this requisite multiplies its ability to create better conditions for its own survival compared to rival structures.

In this way, the structure we have roughly defined as a "theoretical concept" undergoes the same process of natural selection and adaptation as all living creatures. However, while the latter must undergo a constant process of selection if they are to remain vital and active, the structures produced by man can avoid this through cultural impositions, such as tradition and habit, and through

interpretative distortions produced by those well known "idols", the hierarchies and schools of thought.

After this brief foray into the realm of objectivity, widely accepted as belonging to science, it would seem opportune to offer some examples. Thinking back to the recent 1960's and the wealth of innovation they brought in the military sphere, one cannot fail to note the abundant and outstanding concentration of doctrine which followed the Series 600 and focussed the intelligence on scenarios open to all possible options of employment. Generations of students in uniform, with varying levels of agreement, were thereby furnished with knowledge and stimulated to undertake further inquiry. However, in retrospect, certain doubts appear to be not wholly unjustified.

The doctrine in question seems, in fact, tailored to an organization whose structures and situation have very few points in common with our own. Once again we find ourselves faced with the old dilemma: whether, given the doctrine, one must then proceed to construct the necessary implement, or whether doctrine must be subordinated to the objective features of the situation and the resources available. The unambiguous nature of Italy's constitutional provisions and chronic shortage of resources would seem to orient our choice necessarily towards the latter alternative. In the presence of limited scenarios matched by limited

Given the doctrine, must one then proceed to construct the necessary implement, or must doctrine be subordinated to the objective features of the situation and the resources available? The unambiguous nature of Italy's constitutional provisions and chronic shortage of resources would seem to orient our choice necessarily towards the latter alternative.

resources, it seems natural that the chosen doctrine should find its pragmatic response in an implement that can be constructed in practice. The historical difficulty of proceeding along this path stems from the absence of a real state of necessity, i.e. such a state, to return to phylogenesis, as imposes selection to ensure survival.

By way of example, let us take a recent episode of war which has much to teach us in all sectors: the War of Yom Kippur and, more precisely, the first two days. The sequence of events is well known: Egyptian surprise attack on the Suez Canal; immediate reaction of the few troops on the spot; employment of the Israeli air force in the historically and theoretically grounded conviction of its ability to regain the initiative swiftly. Then comes the new surprise: a devastating anti-aircraft barrage bringing down over 100 planes in the very first stages of combat. Such a catastrophe would have inevitably toppled any consolidated system of long standing, not trained to react immediately.

Fortunately the organism was young and active. Experience of disastrous events coupled with the trials of the 2,000 years of the Diaspora and the last 25 years spent fighting for survival in a totally hostile environment had, in fact, led to the natural selection of an instinctive capacity for individual and group reaction, leaving no space for the inertia of habit and tradition. Hence the immediate overturning of theoretical stipulations, the development of a new technique of attack and... the rest is history.

Another example is provided by the "Peace in Galilee" operation, where a wholly armoured and mechanized force trained in manoeuvres and mobile warfare came up against the brute fact of rough, uneven terrain and an adversary operating in small scattered formations tenaciously



holding their ground. After the initial heavy losses — above all in material — doctrine, structures and combat techniques were adapted “on the move”. The result was military success, albeit followed by political failure.

Getting back to our subject, we can, it seems, draw the conclusion that whenever excessively stabilized structures are established, they lead to conditions which are detrimental to development and the resulting doctrine becomes “culturally entropic”.

All this need not, however, worry us unduly. Each living being is allowed, not to say requires, a certain amount of irrationality to maintain his emotional balance. Why should we therefore deprive ourselves of our perverse enjoyment in giving formal expression to our intuitions? Creativity is stifled and imagination fettered when limits are imposed on theoretical speculation. However, when a doctrine claims to be concrete and operational from its overall conception right down to the details of its

development on the lower levels, intellectual exercise and theoretical speculation are no longer permitted. These remarks are specifically intended to introduce to final and most inviting subject referred to in the title: training.

TRAINING

From what has been said, it is theoretically inevitable that the cultural model existing in a society will also interact with training methodologies.

On the various levels of military and civilian educational organization, teaching very often reveals the underlying lack of a precise and objective idea of context. The schemes adopted therefore appear to be the

Two factors are normally brought into play when drawing up a training scheme. The first, usually subjective, is doctrine. The second, unquestionably objective, consists of the laws of behaviour.

product of individual experiences and evaluations, and thus all doubts as to their real validity are justified. This can easily be tested. It is sufficient to consider the results in relation to the time and energy spent on achieving them. However, it is time we got to grips with our subject.

Two factors are normally brought into play when drawing up a training scheme. The first of these, usually subjective, is doctrine. The second, unquestionably objective, consists of the rules of behaviour. The former provides the data for the conceptual approach and defines the objective of the training activities. It therefore follows that if, as often happens, doctrine is too far removed from the real situation, the training in which it is pragmatically expressed will be so to the same extent or, at least, will produce results which are uneconomical in relation to their cost. Some aid in avoiding this risk can be provided if due attention is paid on the executive level to the objective



factor mentioned above: the rules of behaviour.

Let us proceed systematically. The training approach may be divided into two conceptual areas which, although related, are quite distinct. In the first, the behaviour-related factors clearly predominate. In the second, the data relative to the situation, i.e. to the scenario, take priority. We will leave the latter aside for the moment as it smacks of subjectivity. The former appears the more important as it concerns individual training, the natural sphere of the rules of behaviour. This area will therefore include formal training in physical education, sports and marksmanship and combat training in its basic components of movement on the battlefield and hand-to-hand combat with or without weapons. This area or phase of training is completely independent of doctrine and achieves the objective of making the elementary unit operational. At this stage all applied

methodology must be examined in the light of the laws of behaviour which, as laid down by our genetic heritage, may be cooperative or antagonistic according to whether or not the technique of execution adopted conforms to them.

Let us therefore take a brief look at their most significant features, starting with those which form part of any natural mechanism of response: learning and movement. It has been established that all learning depends on whether the final outcome is success or failure. Success or failure thus have a sort of feedback effect of strengthening or weakening as regards both the intention to learn and the very quality of the learning. It should also be borne in mind that behaviour itself is greatly influenced and modified by situations in which success has been found more probable, even in the presence of differing subjective convictions. It is a known fact that it is difficult to modify spontaneously selected patterns

of execution when trying, for example, to re-train a self-taught person in sports, or simply in carrying out some manual or intellectual activity. We may round off these remarks by considering the motion which is the direct or indirect product of all our learning processes.

The analysis of behavioural tendencies has revealed that most voluntary movements derive from hereditary coordination mechanisms contained in the evolutionary process of what is normally defined as the movement of walking. In fact, walking brings into play a whole series of equilibriums, actions and reactions, which are the product of the learning consolidated over the ages by our species. That is, we are dealing with a motor sequence which is perfectly adapted to the spatial data specific to our environment and, not being delayed by reaction times, proceeds at the speed of the nervous impulses. Should it become necessary to establish new motor sequences

better suited to new situations, we would have to experimentally adapt our inherited sequences, with obvious consequences as regards reaction times. This proves particularly important in working out techniques of instinctive reaction in shooting and individual combat. In order to illustrate this concept more fully and to underline the relevance of behavioural tendencies, let us examine some concise examples of some operationally important basic types of behaviour: motor activities in general, play, phobic reactions and, lastly, the process of imitation.

Learning and movement have been treated as fundamental elements of behaviour. Examination of motor activities in particular has revealed that the rhythms of the elementary acts within the overall context of movement influence each other reciprocally. In other words, between these acts there exists a relative coordination and a harmonious concurrence deriving from a process of innate central coordination. Any motor pattern whose dynamics of development are in opposition to this coordination produces situations of instability in learning. For example, the action of presenting arms, which involves shifting one's centre of gravity by moving the arms forward without a corresponding balancing of the lower limbs (harmonious concurrence), has traditionally been one of the most difficult to learn. This is aggravated by the difficulty of handling the weapon, especially if, like those issued in Italy, it is unduly heavy and unbalanced as a result of modifications made to the original model (relative coordination).

As instinctive movements are produced by inherited coordination, they have great stability and resist attempts to modify them. Moreover, because of their instinctive nature they have a natural harmony, so that any motor pattern deriving from

them, determines favourable conditions for its execution. It is therefore clear that a "fluid" motor pattern, i.e. one utilizing instinctive movements, will be the most valid operationally. This is of particular importance as regards individual combat techniques, especially in the presence of mass training characterized by an uneven level of basic physical fitness and by the limited time available. Any publication which fails to allow for this is bound to achieve only partial and uneconomical results. On the same subject, it is also to be noted that if we are to achieve fluidity of execution, the triggering mechanism, the order, or the circumstance of performance, must be as precise and simple as possible. Otherwise a process of selective analysis of validity is produced with consequent effects on execution time. Selectivity is only to be introduced when the natural and unreflecting development of the motor pattern takes place in highly sensitive or dangerous circumstances, such as the use of weapons on guard duty. Even in this case, however, selectivity must be kept to the bare minimum. In fact, factors promoting safety in the sense of effects on "third parties" do not promote reaction mechanisms, unless a situation of intrinsic safety can be established from the outset. This is what is achieved, for example, when a sentry is placed in a physically protected position where he cannot be seen.

The second area of interest connected with the comments already made on motor activity is play, understood in the broad sense as activity carried out together with others. In play, which is the most important expressive form in the relationships of both children and adults, inherited motor sequences are activated in instinctive and generally disorderly fashion. The activation of this process is facilitated in play by curiosity

and interest. Its functional validity could, however, be affected by the fact that inherited motor sequences are directed towards the preservation of the species, which is not normally involved in play. Dance, which is a form of play, may be taken as an example. Its primitive and group forms mime with choreographic subjectivity functions related to the preservation of the species, such as mating, aggression and fear. If well defined training goals are to be achieved, it will therefore be necessary to reproduce situations and motivations which can be assimilated.

This can be achieved in combat training by correlating every offensive action to the protection of one's own person rather than to threatening that of the adversary. This is what takes place in the practice of the martial arts, which has been widely incorporated into the training schemes of some Far Eastern countries and of many special units. It is finally to be remembered that in play, apart from the validity of group activity, there is also a close relation with exploration and hence with learning. Schiller remarked that hidden inside the authentic man is always a child who activates his curiosity and propensity for play.

Another form of instinctive reaction is represented by the so-called "phobic reactions" determined by situations of danger for development and survival. This type of reaction could, for example, be exploited on the operative level in order to create behavioural tendencies to react effectively in situations of attack from the air. The phobic reaction is, in fact, a natural and therefore congenital impulse capable of keeping the individual constantly clear of unfavourable environmental situations and steering him instinctively towards favourable ones. This is obtained by positing as a basic condition for survival actions and situations centred on the fundamental deficiency of the



system under examination. The concept is of great importance, not only in the air raid situation mentioned above, but also as regards anti-tank combat techniques and fighting in built-up areas.

Phobic reactions are, finally, also to be linked with the principle of "negative feedback", which follows from the incorrect execution of a particular technique. It has, in fact, been proved that a far greater internal impression is made on an organism by a negative effect produced by an incorrect reaction than by the satisfaction deriving from a correct execution.

In conclusion, some remarks on imitation, if for no other reason than for the high consideration, renown and hopes — largely disappointed, alas — which accompanied its introduction into our training techniques. To be fair, it should be remembered that exact imitation is present only in animals having an elementary

nervous and somatic structure and this capacity is already much diminished in the anthropoid apes. When children imitate the movements of adults, they do so solely for the pleasure of imitating, not for any operational or functional purpose. While exact imitation has great social importance for animals as it favours group cohesion and thus assumes considerable importance for the preservation of the species, very little is known of the physiological processes determining and accompanying imitative acts in man.

It has, however, been found that even in the presence of rudimentary critical capacity, in order to transform what is seen and heard into an autonomous motor event it is necessary for it to be physiologically acquired and that the imitated action be directed towards self-preservation or, at least, towards the interest or pleasure of the imitator. It is unnecessary to point out how

difficult this is to achieve, given the social and psychological backgrounds of those on military service.

To sum up, consideration of the first of the two areas into which the conceptual approach of training activities has been divided suggests a re-examination of the schemes at present followed in individual training in order to evaluate their effectiveness and productivity in the light of the remarks made above. This task is the specific responsibility of teaching institutions and whatever other body or unit is involved with the first training cycle and the initial stages of the second. The first area is of fundamental importance in that it affects the very possibility of profitably developing the second, i.e. the area in which scenario aspects take priority. As regards the latter, one can say that the priority accorded to scenario features means that it involves officers from the rank of captain up, rather than



lower ranks. Given the Italian situation, this area has little chance of development and field testing with anything larger than a company. It will therefore be a matter for Exercises for Officers, Command Post Exercises and impromptu exercises, where restrictions of space can be made up for by imagination and capacity for graphic visualization. The latter are, moreover, precisely the sectors in which the conceptual assumptions of doctrine must be analysed in free dialectic relations. However, doctrine has already been discussed at length and any further mention would be taking advantage of the reader's goodwill, not to mention his powers of resistance.

CONCLUSIONS

Conclusions always represent the moment of truth, in that they generally lead one to abandon the tentative approach of hypotheses and back on to the presumptuous expounding of a thesis. However, as the methodological process admits of no exceptions, I put forward the following points.

- It seems reasonable to hope for general agreement as to the interdisciplinary value of culture and therefore to proceed in that direction, resisting the constant temptation of sectorial evasion, where tradition, precedent and contingent environmental factors offer greater chances of agreement and success and appeal to latent mental laziness and conformism.
- Cultural entropy or cultural invariants, whether or not accredited with a precise content and scientific connotation, represent a lurking danger of attachment to the conservatism of intellectual or operative positions which have long been superseded and are no longer active. Awareness of this should therefore stimulate the investigation of how up-to-date and hence how valid the basic assumptions on which we operate are.
- Doctrine is often a fetish which originates and finds nourishment in man's desire to erect lasting monuments, in consolidated traditions, in habit or in reluctance to accept and examine in depth, rather than in any objective and clear-sighted analysis of the real situation.
- In inventing and perfecting training techniques aimed at preparing the soldier on the

individual level and fitting him into the elementary unit, the objective facts of behavioural tendencies cannot be ignored if results are to be produced economically. This is the precise responsibility of those involved with the first cycle of training and the initial stages of the second.

In concluding these laborious notes, which are perhaps dictated more by a desire to understand and to communicate than by any hope to exchange knowledge, I am assailed by doubt and the fear of having at times indulged in abstraction and intellectual speculation.

I hope at least to have achieved the minimum objective of providing a useful exercise for the mind to keep at bay the demanding and seldom gratifying daily cares and prevent them from gaining the upper hand and narrowing our mental horizons with their pragmatic limitations. It is to defend just this breadth of vision that we must be stimulated to study, understand and investigate in depth what lies beneath the surface of things, in the hope that there will be a natural feedback effect on our knowledge and actions.

Maj. Gen. Lucio Innecco

REPORT ON THE EMPLOYMENT OF THE AIRBORNE TROOPS

The Report deals with the fundamental elements of tactical planning, organization and conduct of airborne operations; moreover it outlines the procedures of employment after an air landing and points out the criteria that should guide the planning and development of particular forms of combat.

The norms contained in the Report, although aimed at the paratroop speciality, are also applicable to other "light" units.

In particular, the norms purpose to give useful pointers as regards the employment of the Rapid Intervention Force (FIR).

Within this framework, joint interservice operations are also described, but, in any case, they always refer to the actual operational capabilities of the airborne troops available in our country.

Among the preferential conditions of employment, illustrated in the publication, those connected with area interdiction and counterinterdiction are to be considered the most important.

For the instances in which the units operate in conditions and procedures comparable to



those typical of the motorized units, the indications given by Publication no. 912 of the Doctrinal Series "Employment of the Motorized Combat Group at Battalion Level" are to be considered fully valid.

Publication 907 consists of text and annexes and adopts, like the other publications of the series 900, the criterion of "modularity". Each subject is thoroughly examined in the relevant chapter and the reader, therefore, does not have to refer to other sections of the book.

A paratrooper after an airdrop.

The text, accompanied by illustrations and divided into four parts, outlines the characteristics of the airborne troops, their typical operations, the preferential operational conditions of employment and their logistics.

The annexes essentially contain the elements for carrying out the function of command and control and are a practical reference for the employment of means and materials typical of the units

OPERATIONS OF THE AIRBORNE TROOPS

AIRBORNE OPERATIONS



AIRMOBILE OPERATIONS



considered and also for consultation of the Standardization Agreements (STANAGs).

PART ONE

It consists of two chapters, which deal with the organic, tactical and employment characteristics of the airborne troops and describe the airborne and airmobile operations. Within this framework, it illustrates in detail the characteristics of the paratroops, defining, moreover, the air-transportable forces as units belonging to the Infantry Major Units, such as, for instance, the motorized and the alpine troops, which are trained and organized for their air transport and landing, when necessary, in the employment area.

In the first two chapters there is a glossary of most of the basic nomenclature used in the publication.

In fact, during the

elaboration of the volume, it emerged that an updating and widening of the airborne troops lexicon would be necessary, in order to avoid misinterpretations. Such updating will be appropriately included in the Military Nomenclator.

PART TWO

This section deals with the airborne troops operations and therefore is the fundamental part of the publication. It includes the chapters concerning the airborne and airmobile operations, and those dealing with the examination, on a common basis, of the relevant organizational and executive activities.

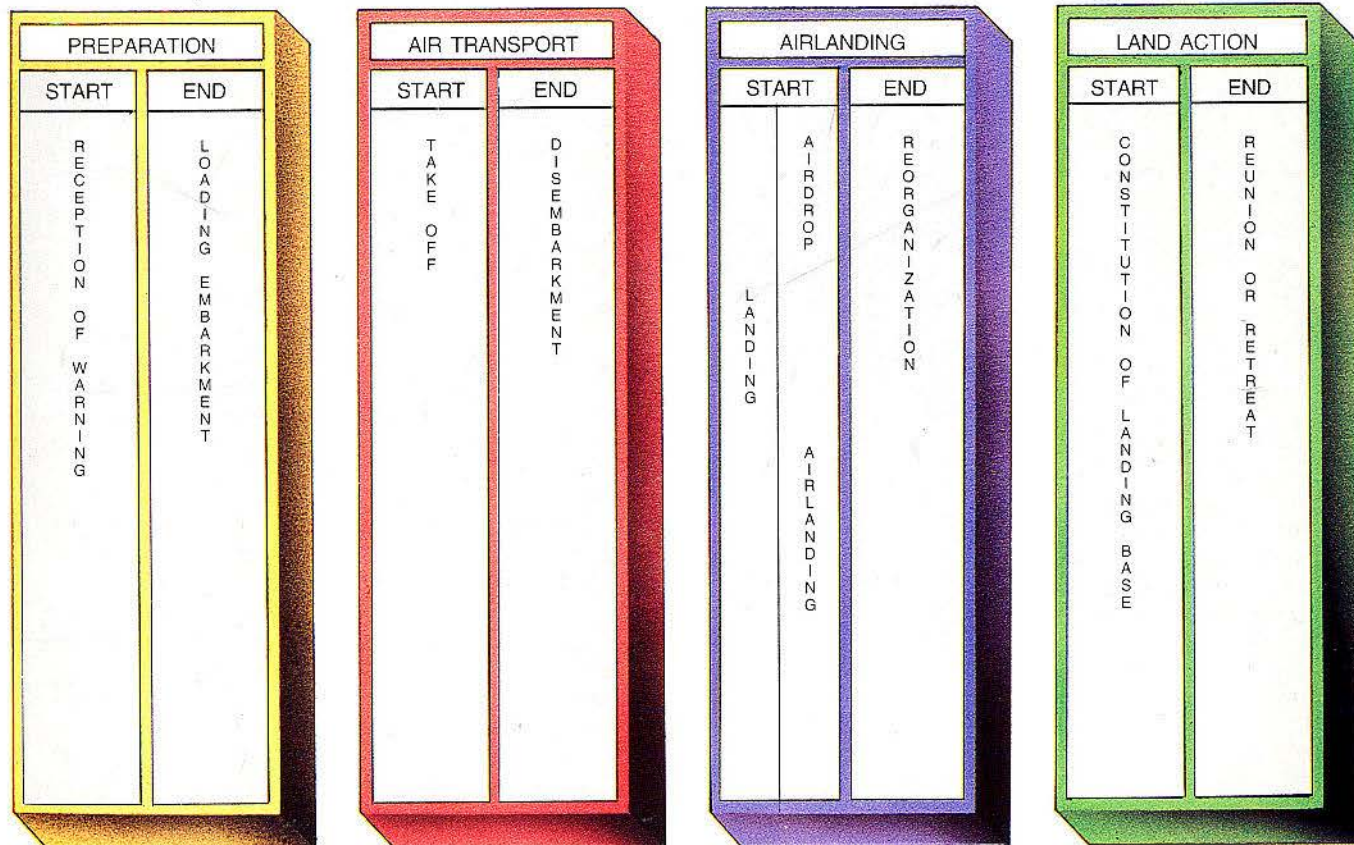
Operations are defined as **"airborne"** when the movement of forces towards a target area, and the connected logistic support, is accomplished by means of fixed-wing aircraft.

The definition follows the NATO model (Airborne

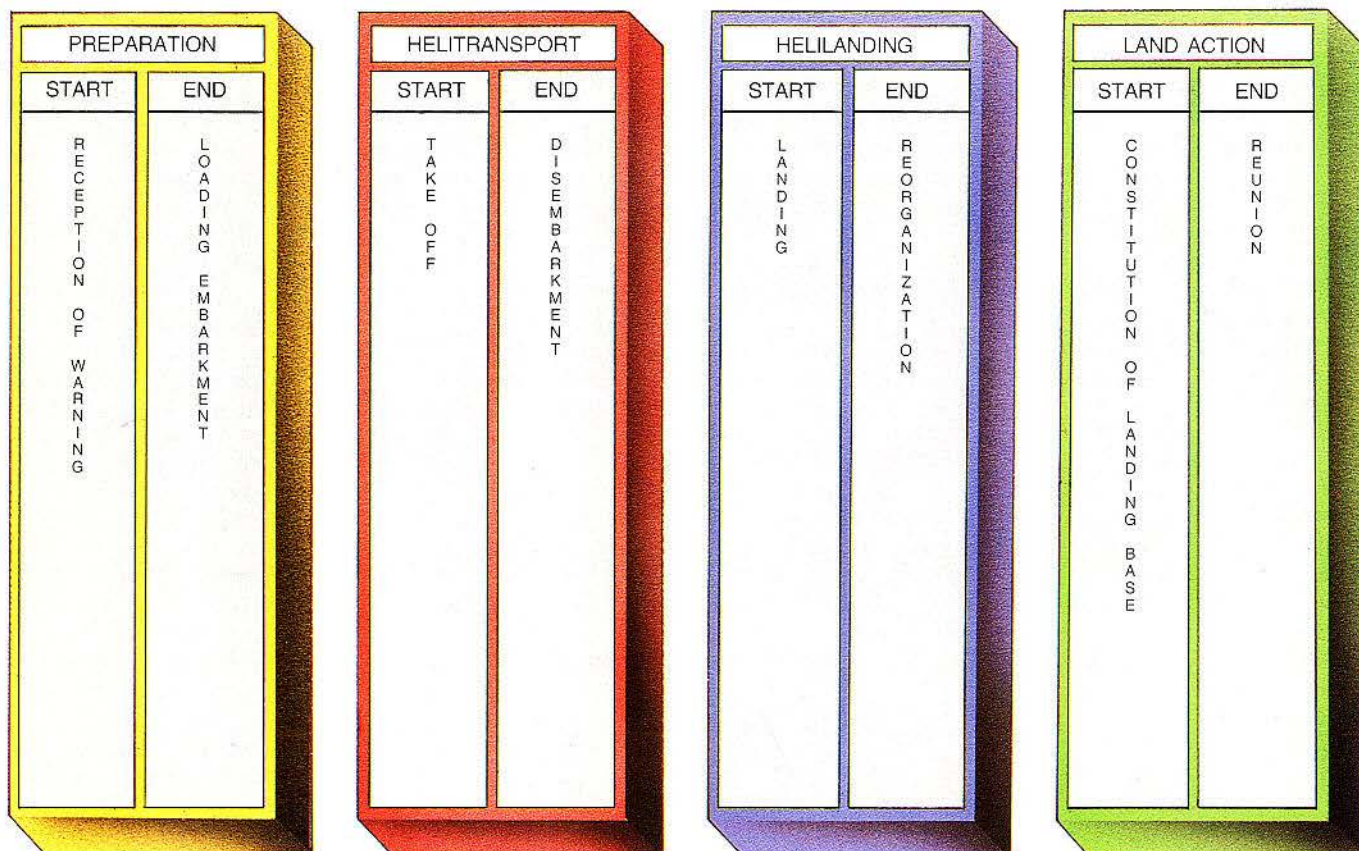
Operations); it is an improvement over the one used in our country up to now (air landing), which is in fact a limiting one, in that it concerns only one phase of the complex operational activity which, as a matter of fact, is divided in four phases: preparation, air-transport, air landing and land action. In particular:

- the preparation envisages a number of "preparatory" activities which start upon reception of the warning order and end with the loading and boarding of the planes made available for the mission;
- the air transport, from the aircraft takeoff to the troops' jump, is the most exacting moment for the airborne force;
- the air landing consists in the introduction of the airborne troops into the target area with airdrop and air attack procedures, and is concluded with their reorganization;
- the land action is the execution of the tactical actions necessary for accomplishing the

PHASES OF AN AIRBORNE OPERATION



PHASES OF AN AIRMOBILE OPERATION



task; this part is also the subject of a successive and more complete discussion, within a survey of the operational situations of preferential employment.

The **airmobile operations** envisage, instead, that the movement towards the battlefield be achieved by means of rotary-wing aircraft.

This chapter is not an absolute novelty, in that it repeats concepts which were already expressed in other publications of the series 900, with special reference to no. 912 and no. 942, concerning, respectively, the employment of the motorized combat group and the alpine combat group. The mentioned publications define it "airmobile action" because, considering the level concerned, the activity is rather limited in size.

By adopting the term "operation", although the tactical conceptions remain substantially unchanged, the action has purposely been given a wider scope and greater complexity.

The airmobile operations, like the airborne ones, are divided into four phases: preparation, transport by helicopter, landing and land action.

The exhaustive examination of the **conceptual, organizational and executive activities** purposes above all to develop, on a common basis for airborne and airmobile operation, working methods and procedures which are rather complicated but nevertheless essential for a correct planning of the operations.

In the chapter regarding the conceptual activities, the following is emphasized:

- the determination of the Commands responsible for the planning and indication of their respective tasks;
- the meaning of the "planning directive" which, issued by the highest level of Command concerned with the operation, initiates the entire conceptual phase.

The chapter regarding the organizational activity specifies

the succession and contents of the various planning documents.

In short, based on the warning issued by the Commanders of the airborne operation, each individual Command (land, air and — possibly — maritime) draws up preliminary plan projects.

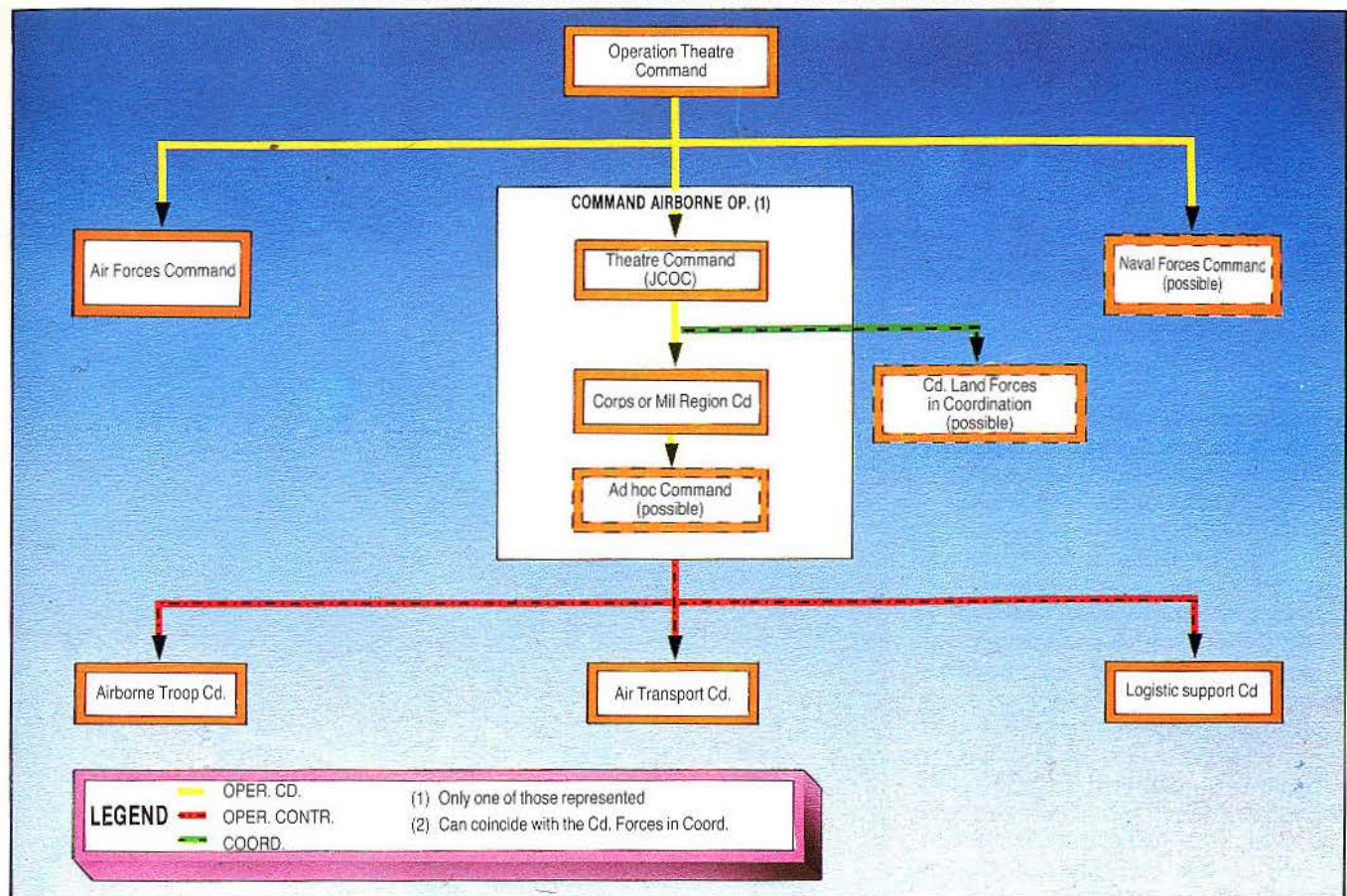
These are discussed at a collegial meeting and harmonized in a general operation project, which includes, in a progression inverse to the action to be carried out, plans for the land action, airlanding, boarding and plane transport, and preparation.

After the approval by the Commander of the airborne operation, the general project becomes the **general plan of the operation**.

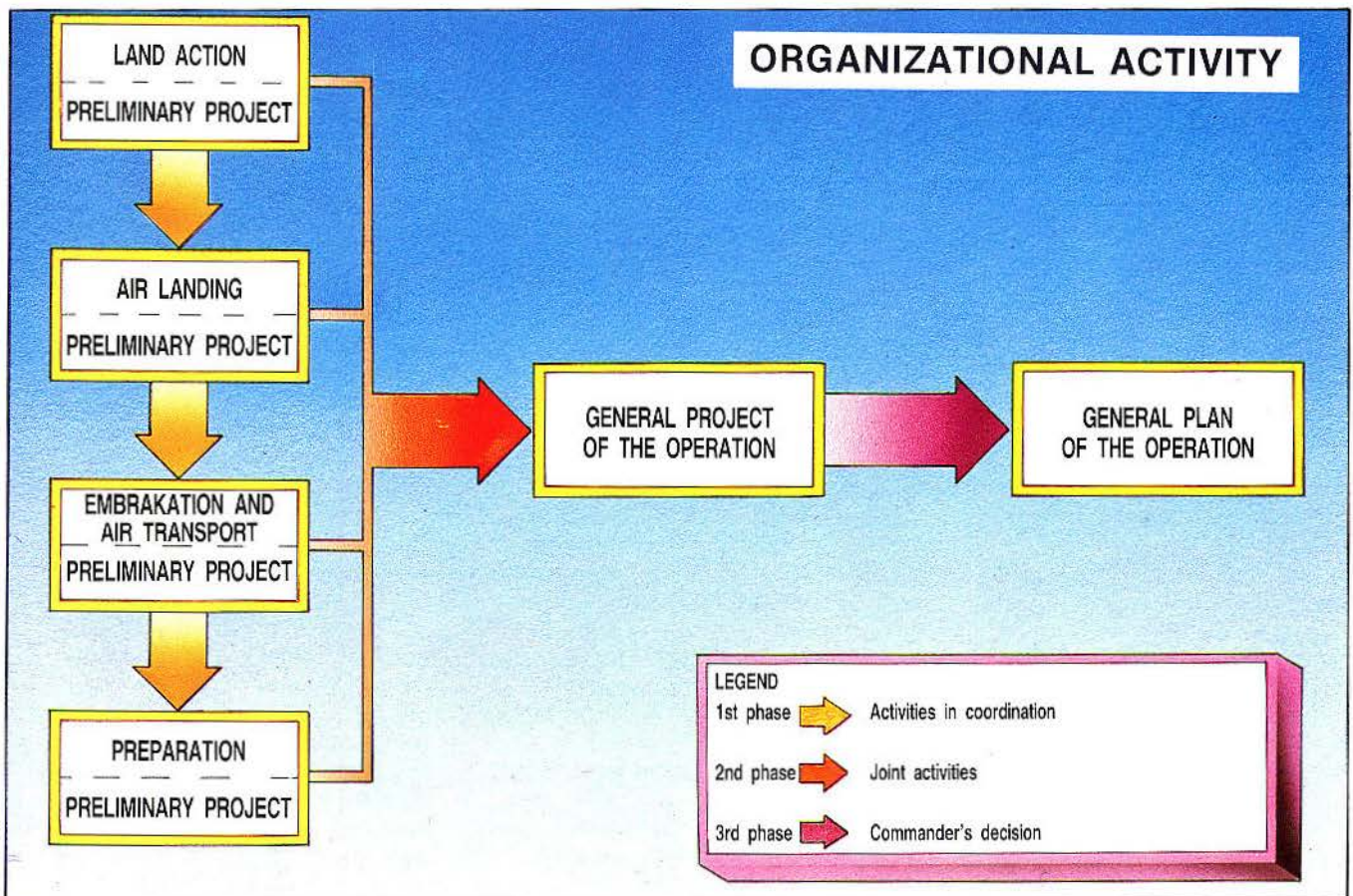
The chapter regarding the executive activity develops the action through which the operation is actually carried out: the planning procedures concerning these actions had been examined in the previous two chapters.

The chapter constitutes

COMMANDS CONCERNED WITH THE PLANNING OF AN AIRBORNE OPERATION



ORGANIZATIONAL ACTIVITY



therefore a synthesis of the whole discussion, in that it intends to explain, step by step, each moment of the operation in the sequence it actually occurs.

The most outstanding aspects concerning the various activities are:

- preparation: organization of the command and control system, issuing of orders, specific training activities, preparation of materials, intelligence activities, affluence to the boarding area;
- boarding and air transport: boarding papers, embarkation, flight procedures;
- landing: introduction of guiding patrols, division of the forces into successive waves, assignment of the respective tasks, reorganization procedures;
- land action: possible operational situations for reference;
- reunion or retreat: implementation procedures.

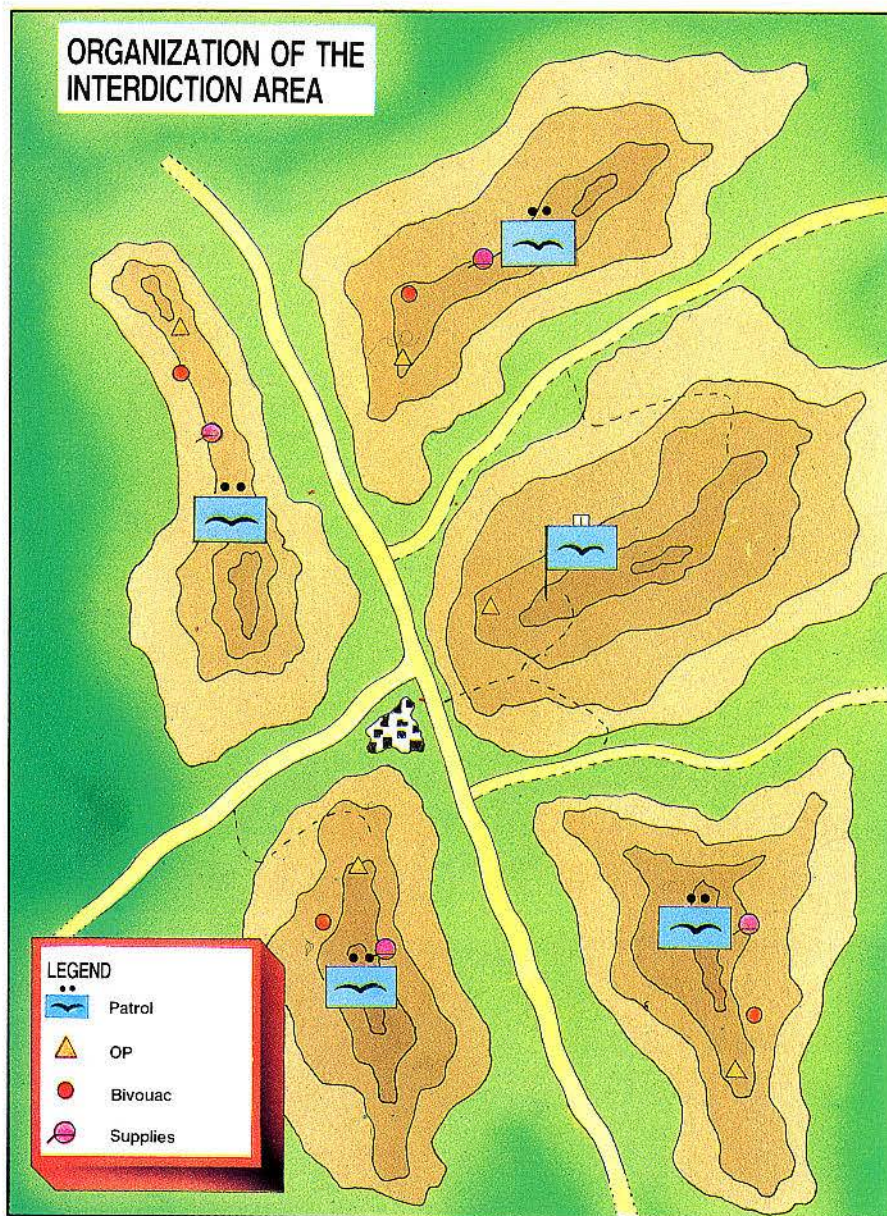
The chapter ends with a review of the peculiarities of the **mountain environment**. In particular it stresses both the importance that the mentioned operations could have in removing the environmental obstacles which hinder the movement on land of the forces, and the difficulties deriving from the lack of adequate landing areas and from the adverse weather conditions.

PART THREE

This part outlines operational situations of preferential employment and describes, at the same time, the environment, the resources and the procedures to be adopted.

It completes the picture of the operational capabilities, focusing on the intrinsic "capabilities", albeit not always specific, connected with the airborne troops.

In the relevant chapters, part three deals with area interdiction and counterinterdiction, raids and operations for the conquest and holding of position.



Area interdiction

It is a particular form of combat developed by military forces in enemy-controlled areas and is carried out through direct actions aimed at preventing or hindering the enemy activity of command and control, intelligence, movement, fire and logistic, and it is generally seen as a support activity, within the framework of a higher level manoeuvre or, exceptionally, as an independent activity.

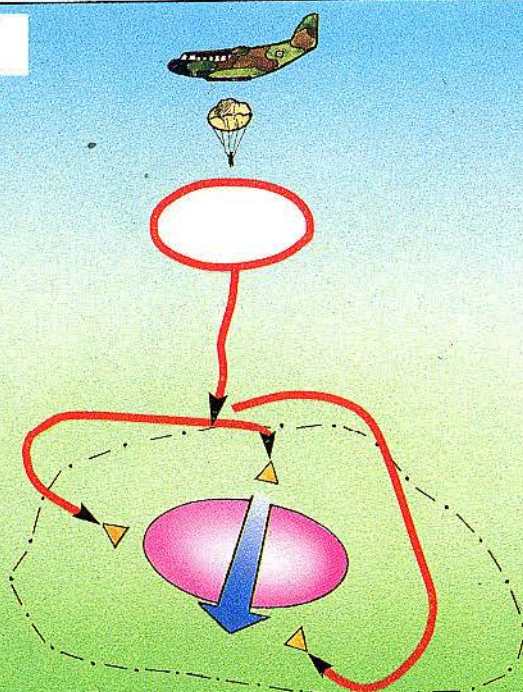
The publication points out the procedures regarding the introduction of the forces, the organization of the area of interdiction and the forms of

combat, such as: ambush, coup de main and sabotage. As a concluding phase of the interdiction operation, the publication describes the filtering-out action and the reunion with the friendly forces.

Area counterinterdiction

It is a particular form of combat, aimed at detecting, isolating, eliminating or capturing the forces which are conducting the action of area interdiction. It is usually included within the measures adopted in order to ensure the security of the rear areas or of areas within the Territorial

RAID



LEGEND

--- Security belt
 → Approach to obj

▲ Obs
 → Attack

Zone. The action, based on a painstaking search for information, also through the employment of patrols and observation and listening posts, is essentially a mopping up operation.

Raid

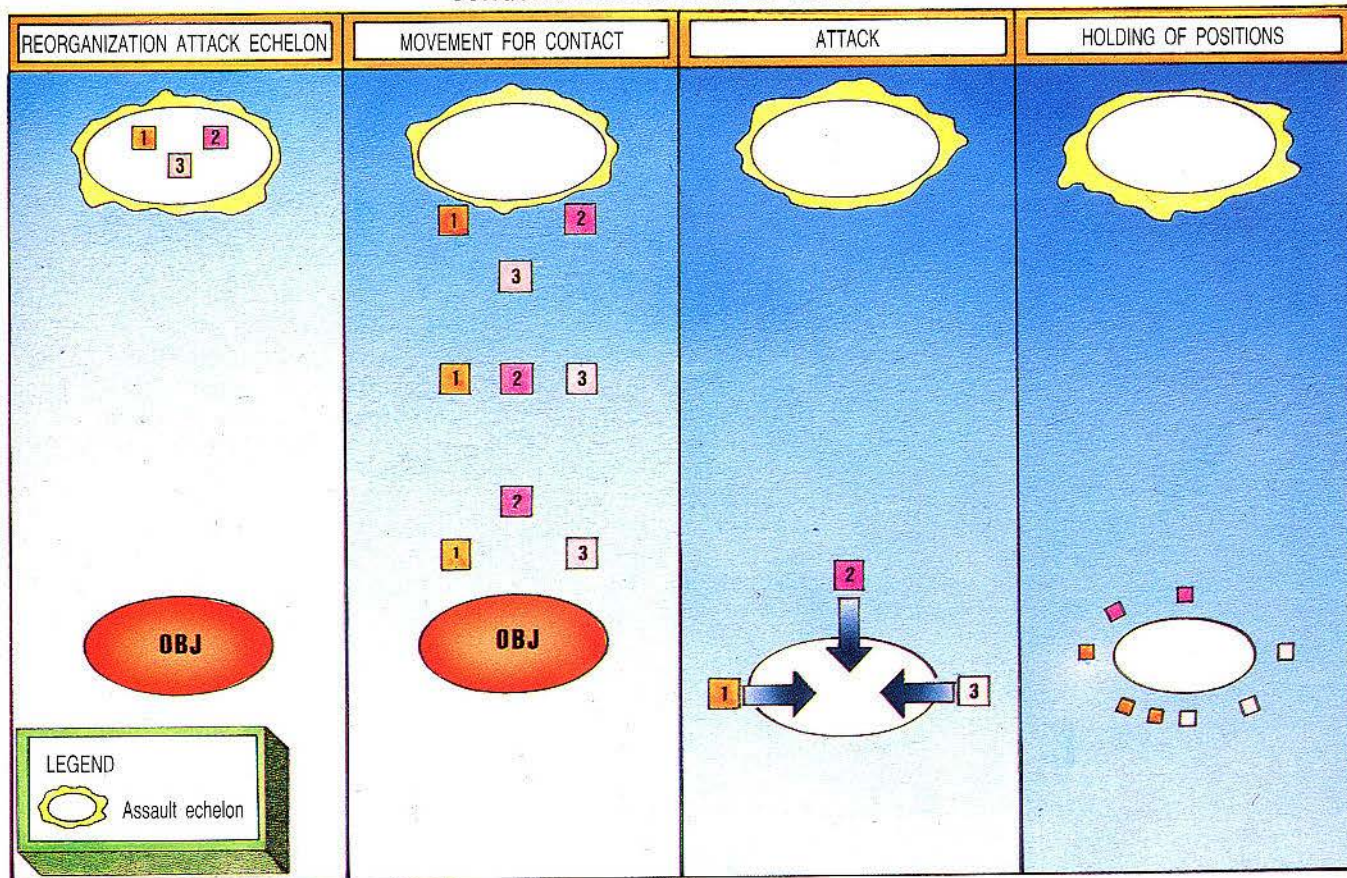
It is a quick action, carried out by **surprise** by a force of limited size, with recourse to **in-depth infiltration** into **enemy territory**, with a view to:

- gathering information;
- destroying enemy facilities and installations;
- capturing personnel or materials of great interest;
- disorganizing the enemy, forcing them to change their plans or to engage a substantial number of forces for the defence of the rear areas.

Therefore the preferred targets of a raid can be Command Posts, radio centres, radar installations, airports, logistic units, etc.

The units entrusted with

CONQUEST AND HOLDING OF POSITIONS



this action are very limited in number and are normally air-dropped into the zone of operation.

The action is carried out with extreme rapidity and with typical coup-de-main procedures.

Operations for the conquest and holding of positions.

Their purpose is to:

- occupy, in defensive situations and within the contacting action, position of outstanding importance, which will be successively handed over to other units tasked with the restraining action;
- hamper, in offensive and counteroffensive operations, especially in the prosecution of the in-depth efforts, the rearward movement and/or the supplying of the enemy forces.

Moreover, one can envisage the reinforcement of vital positions which, during the fight, may have been isolated and surrounded by the enemy, risking to be overpowered.

Within this framework, a particular aspect concerns the ways of breaking an encirclement from the outside and successively retrieving the forces.

PART FOUR

The subject regarding the employment of the airborne troops, being included, also for its logistic aspects, within the context examined by the Doctrinal Series 900, limits the survey of the logistic problem to the peculiarities deriving from the employment of aircraft as the only means of transportation for introducing the logistic organization into the combat and for supplying it.

In particular, two distinct chapters deal, respectively, with the specific relevant doctrinal aspects and the particular aspects concerning the operations of preferential employment.

Also referring to logistics, the publication points out that the problem must be examined



and solved with a unitary vision.

In these operations, it is absolutely necessary to observe the principle of unity of command, since they imply the integration of components and activities of different Services with diverse requirements.

ANNEXES

The annexes include:

- a list of the typical means employed for air transport, air landing and helicopter transport;
- subjects of essentially organizational character, aimed at supplying methodological and procedural elements for the development of the activities connected with the employment of the airborne troops;
- relevant standardization agreements (STANAGs) and Allied publications (AP).

Paratroopers preparing for an airdrop.

CONCLUSION

The Report, within the publications referring to the various Combat Units, completes the frame of reference of "light infantry". Also in this case, the norm is precise and intransgressible in principle, and flexible when it comes to a concrete case.

Convinced that freedom of decision and action at all organizational levels constitutes a preeminent factor for success, it is now up to the Commanders at the various levels to derive useful suggestions, for the correct utilization of the margins of autonomy they are allowed for the preparation and the employment of their units.

NOTIZIA EDITORIALE

**RIVISTA
MILITARE**



GUERRA D'ITALIA
La campagna del 1859

La Rivista Militare, nel quadro della ricerca iconografica volta a favorire la conoscenza delle tradizioni e della storia dei nostri eserciti, annuncia la prossima pubblicazione di un'opera in due parti dedicata alla Seconda Guerra d'Indipendenza.

Il primo album conterrà 57 riproduzioni artistiche di altrettante litografie acquerellate a mano, eseguite dall'Editore-incisore Perrin nel 1860.

Le immagini, veramente pregevoli, sono tratte da disegni del celebre pittore Bossoli che fu al seguito dell'Armata piemontese e degli alleati francesi nella guerra del '59.

Il secondo album documenta, attraverso la riproduzione di 69 litografie anch'esse acquerellate a mano, eseguite da Perrin e da Adam da disegni dell'epoca, la spedizione dei Mille e gli interventi dell'esercito piemontese nell'Italia meridionale.

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L'annessione del Regno di Napoli

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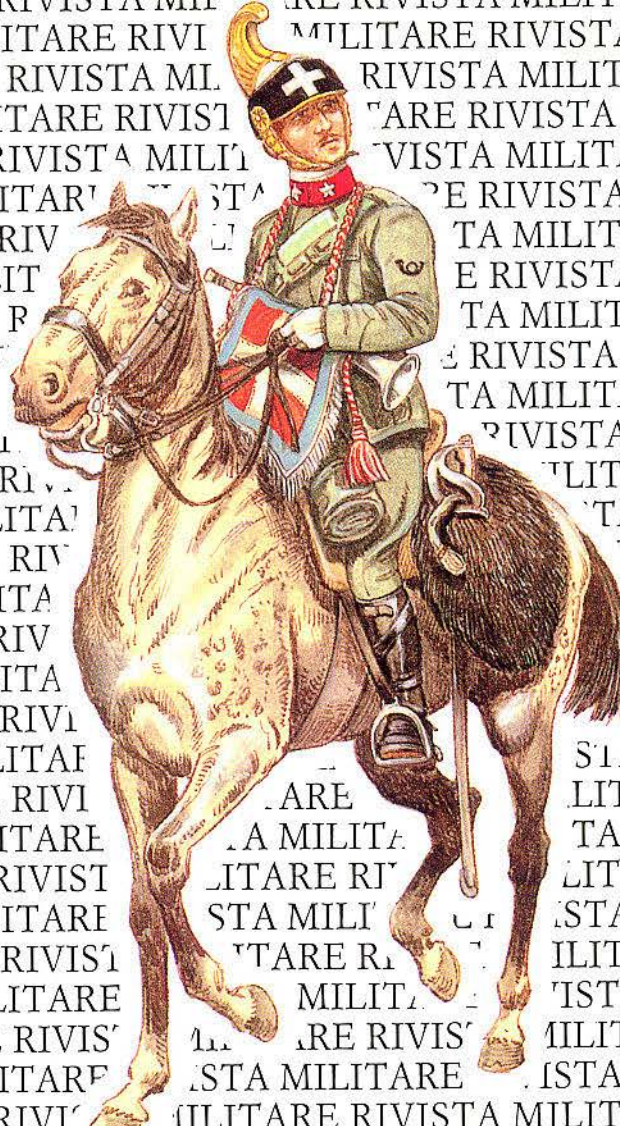
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THE SOLDIER IN THE NINETEENTH CENTURY ITALIAN PAINTING

HISTORICAL PAINTING IN ITALY

FROM THE RESTORATION TO THE FIRST WAR OF INDEPENDENCE



Italian secular painting of the first half of the 19th century substantially develops around some genres which are consolidated, historically, in the Napoleonic period: the official, political, military and aristocratic portraits; the allegorical pictures; the pompous way of celebrating battles; vedutismo; the recovery, in a romantic vein, of the great events of

history and of the deeds of famous figures; the representation of the best pages of contemporary European literature and theatre and, more important, the authors of past times, so dear to the Pre-Romantics.

The art of representing every-day life and of intimate sketches is still to come. The situation is quite stable and it does not permit any kind of

Vezzani, Fighting at Palazzo Litta, Milan 1848.

variant, besides those described above, during the years of the Restoration, i.e. from 1815 to 1847.

In the years immediately following the Congress of Vienna, in particular, the Austrian domination in Italy was generally accepted by the ancient aristocracy, the

clergy and the rural classes. The only exceptions were the best spirits of the new aristocracy and the upper middle classes, who conservative with horror the consolidation of an absolute ultra-conservatist tradition. The slow establishment of a consciousness of being Italian is the history of the Risorgimento itself, which passes through fundamental stages; the Carbonari movement and the liberal sects; the constitutionalist revolts of 1820 and '21; the riots of 1831 and the Mazzinian uprisings.

Of this complex and articulate series of events, historical painting has left an immense documentation, which was rarely executed simultaneously with the facts and more often "a posteriori", which is witnessed by the paintings and lithographies present in the various Museums of the Risorgimento. Most of them are celebrating and commemorating approaches, almost always lacking in deep artistic sensibility. The emotional introspection gives way to a mannered representation, which often becomes very superficial. Facts are seen from the outside, rather than carefully observed with the intent of rendering a depth of vision.

From the formal viewpoint, the pictorial narration is drafted with the utmost care down to the slightest detail, but its contents are like those of an illustration, either devoid of any sense of participation or overflowing with declamatory excesses. In the middle of these extremes — which constitute the vast majority of an iconographical genre which has been excessively exploited, reaching the limit of habit and stereotype — it is not easy to find examples of pictures in which the artist participates with a warm emotional impetus, keeping his balance with intense notations of form and content and trying to avoid the dangers both of detachment and emphasis. On the other



hand, the themes themselves do not encourage, nor permit, this kind of artistic operation and in this they mirror much of the celebratory lyric of the time.

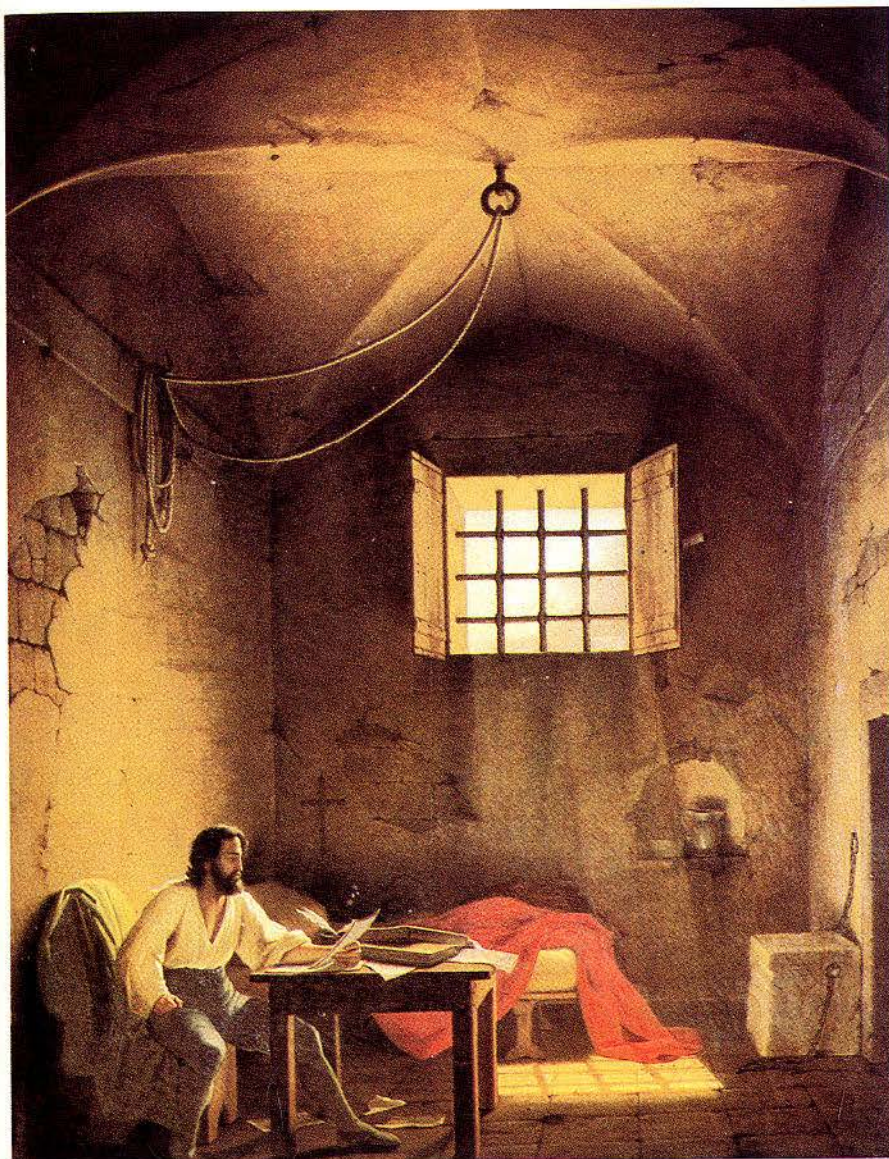
Nevertheless, in this first insurrectional phase preceding the first War of Independence, albeit within constant situations and places, some prototypes are worth recording, which are of considerable interest.

Among the paintings which foreshadow the prolific diffusion of one of the most significant patriotic themes — the portrait of the prisoner and the persecuted, who opposes a serene interior firmness to mortification and condemnation — let's devote our attention to

Francesco Hayez, *Portrait of Colonel Count Francesco Teodoro Arese Lucini in prison*, 1827.

the painting coeval to the historical event.

It is a genre of representation which preludes the development of the same contents in an allegorical and metaphorical key, peculiar to the painting of the end of the 1850s and the beginning of the following decade. These paintings — as is known — were samples drawn from the less recent history of the imprisonment of Savonarola, Giordano Bruno, Arnaldo da Brescia, Christopher Columbus,



Vincenzo Niccolini, *Interior of a prison with a patriot or a man of letters*.

and had the function of incitement and of ethic-behavioural support to affirm the ideals of freedom and justice. They constituted an indispensable landmark for those who were preparing to bravely face the fights, the exploits and the vicissitudes of the second War of Independence. They were, in this way, epigones of a "realistic" genre of a clearly romantic tone, but they also presented a more or less explicit criticism of the dominant power. The best examples of this

genre can be found in the *Portrait of Col. Count Francesco Teodoro Arese Lucini in prison*, (1827) by Francesco Hayez and *Interior of a prison with a patriot or a man of letters*, (1830) by Vincenzo Niccolini. The *Portrait of Count Arese in prison* is considered one of the best works by Hayez. It is an exceptional picture — as far as the Italian history of art of the early 19th century is concerned — both for the unusual iconographic choice and for the extreme stylistic rigour. It is a style which upsets the composed convention and the inventive scenography of the adapted portrait, or — as it was more exactly defined by the contemporaries — of the "illustrated character".

Arese's personality is sketched by the artist with astonishing insight and, in its substance, mirrors the attributes recorded in the Count's biography written by Jacopetti ten years after his death: "of medium height, well-proportioned limbs, forehead composed and dignified, serious look, gentle facial features, exquisite urbanity, calm spirit, loyal disposition, loving heart, keen on the beautiful, honoured by military glory and sincere in friendship."

Francesco Teodoro Arese Lucini (1778-1836), being a Napoleonic ex-colonel, was involved in the trial against the Federates in July, 1822 and was sentenced to death in 1824.

The sentence was commuted to three years' imprisonment in the Spielberg, on account of the revelations he made during the inquiry, (justified by his incapacity to lie), which seriously aggravated Count Confalonieri's position.

Hayez, in his "Memorie", recalls that it was Arese himself who, once out of prison, ordered him a life-size portrait representing himself in prison, giving the painter a very detailed description. Hayez specifies: "I had to take the necessary steps at the Criminal Court in order to obtain the same kind of chains he wore". Indeed, the monumental air of the composed and serene portrait of the hero with a sad and vigorous look, is determined by an unusual realistic emphasis put on symbolic objects; the big chain on his ankles, the blanket, the little bench, the bare severity of the architecture.

Less celebrative, but more scenographic and symbolic with meanings not pertaining to a particular person, is the *Interior of a prison with a patriot or a man of letters*, (1830). We are presented here with a descriptive statement, full of literary emotions, more attentive to the picturesque characteristics of a meticulous setting and less centred on the person, which is not clearly



recognizable and is therefore represented as an archetype. "The scenographic effect of the picture depends" — is written in the presentation of the *Catalogue Garibaldi, art and history* (Centro Di, Florence, 1982, p. 70) — "upon a masterly play of the light coming from the only window and falling upon the unmade straw bed, on the brick floor, and gently riverberating towards the walls and the vault. On their way the rays detect and delineate the few objects of poor furniture, the archeological quotation of the niche in the wall with a jug and a bowl, the big squared block with the heavy chains, the ring with the hanging rope for scourging. The seated personage, a young man at the height of his strength, seems to be re-reading one of his writings and he is therefore

immediately revealed as being a man of letters, a title which, together with the fact of being a prisoner, is very close to that of Patriot".

During Romanticism a providential and optimistic concept of history gradually asserts itself also in Italy, both at the philosophical and literary level, with the consequence of a recuperation of the traditional values, which become elements of stimulus for the anti-Restoration ideological movement.

This revaluation of history as having an enlightening function, and of the Christian Middle Ages as a forge for a modern civilization, based upon the assertion of the national sentiments, finds its application also in the figurative arts, during the early Risorgimento. In fact, paintings whose real

Francesco Hayez, *Pietro l'Eremita preaches the First Crusade*.

theme, under the appearance of an allegorical disguise, is to stir up action against the oppressor are very frequent. The invitation to read into these artistic works is bound to the concept of "up-to-dateness and contemporaneity of historical teaching". Among the paintings of this type, which had their moment of utmost splendour — as far as the Risorgimento is concerned — in the 1860s, the following are worth mentioning: *Pietro l'Eremita preaches the First Crusade* (1829) by Francesco Hayez and *The Germans expelled from Genoa by Balilla's uprising*. (1842) by Emilio Busi and Luigi Asioli. Were are



Emilio Busi-Luigi Asioli, *The Germans expelled from Genoa by Balilla's uprising*.

presented here with two works that are very different as to their form, content and pictorial canons, but that nevertheless share the same denominator: the historical vision seen as a manifesto of civil engagement.

It is not by chance that the large painting by Hayez was celebrated and loved especially by Giuseppe Mazzini, precisely for the thematic choice which on the one hand emphasized the strength of coesion of great ideals and on the other prefigured one of the basic concepts of Mazzini's thought (the binomial God-People). Starting from the analysis of this painting, Mazzini — in a famous 1841 writing —

commends Hayez as being "the complete artist, as far as the times permit him to be, who assimilates, in order to traslate them into symbols, the thoughts of the age, which are stirring in the bosom of the nation; who harmonizes concept and form; who idealizes his figures without misrepresenting them; who creates protagonists, not tyrants; who makes us feel and think much".

The Germans expelled from Genoa by Balilla's uprising was considered by Hayez' contemporaries as full of soul and fury. In it, the celebration of the historical event is much more recent than in Hayez' preceding work.

The strong pedagogical function attached to the emotional vivacity of the message is due to the content of the subject and to the

emotional liveliness of its message. The subject refers to the famous insurrection against the Austrians which occurred in Genoa in 1746 and is represented through diffuse references and quotations of French and "republican" historical painting, not least **Liberty guiding the People** by Delacroix. "At the centre of the composition" — is written in the critical comment of the *Catalogue Garibaldi*, art and history, hoisted on the fatal mortar, the insulted boy towers, rousing to the slaughter of the hated invaders a crowd of sailors, fierce an picturesque, of bold common people, of fearless women, while everybody is throwing pieces of furniture, objects and stones out of the windows. Around the figure of the hero, groups of different types accomplish the task of

expressing the various nuances of the passions involved, down to the melancholy and compassionate note of the dying young soldier, visible on the left".

Obviously, this bird's-eye view of Risorgimental painting of the early XIX century cannot but limit itself to the archetypes of only a few genres of historical representation and completely omits the vast sector of the official portraits of the protagonists (Mazzini e Garibaldi *in primis*), in order to emphasize the chronicle of some salient moments of the first War of Independence. This can be inferred, to a small extent, from pictures painted simultaneously with the facts and, mostly, from pictures painted from the 1860s.

With regard to these, it is necessary to say that though the most famous paintings on the events of 1848 have been painted some years after the facts, they lack a controlled vision and lay the stress on the rhetorical and the celebrative, so much so as to depict environments, scenes, people with characteristics of strong and touching realism; even too much, sometimes.

Such works as *Garibaldi and Major Leggiere carry dying Anita during their flight* (1864) by Pietro Bouvier and *The body of Luciano Manara at Santa Maria della Scala in Rome* (1884) by Eleuterio Pagliano are typical examples of a vast series of "images" which, on the one hand, present in the smallest details and in specific episodes the complete outline of events, heroisms, battles, vicissitudes, of the first War of Independence, on the other are lacking in immediacy and breathe heavily of hagiography.

Both for the agile characteristic of this article and for the above-mentioned observations, it is therefore

Pietro Bouvier, *Garibaldi and Major Leggiere carry dying Anita during their flight*.

Carlo Bossoli, *Carlo Alberto on the balcony of Casa Greppi*.



more logical to limit our analysis to pictures contemporary to facts and to works which, though they are not free from a good deal of emphasis, have at least the quality of sincerity and frankness. They are paintings neither artistically valuable nor figuratively famous, whose merit is however that of documentation. Thus, in a painting by Verazzi, *Fighting at Palazzo Litta*, we find ourselves in the middle of the Milanese barricades of the "Cinque Giornate" (March 18th-22th, 1848); in the painting by Carlo Bossoli, *Carlo Alberto on the*

balcony of Casa Greppi which is an evocative scene of daring perspective, the viewer is at a respectful distance, among those who are threatening Carlo Alberto because they do not want the surrender of Milan to the Austrians, (August 5th, 1848); in another painting by an anonymous painter, we observe the Milanese insurrectional committee, in a hall of Palazzo Taverna, refusing the proposal made by Major Ettinghausen to act as a mediator to Marshal Radetzky in order to obtain an Armistice (March 20th, 1848). Finally, in the painting by Pietro Bouvier *Pasquale Sottocorno at the assault to Palazzo del Genio*, we witness a key episode of March 21th, 1848. And the so on, until we reach the events of the Roman

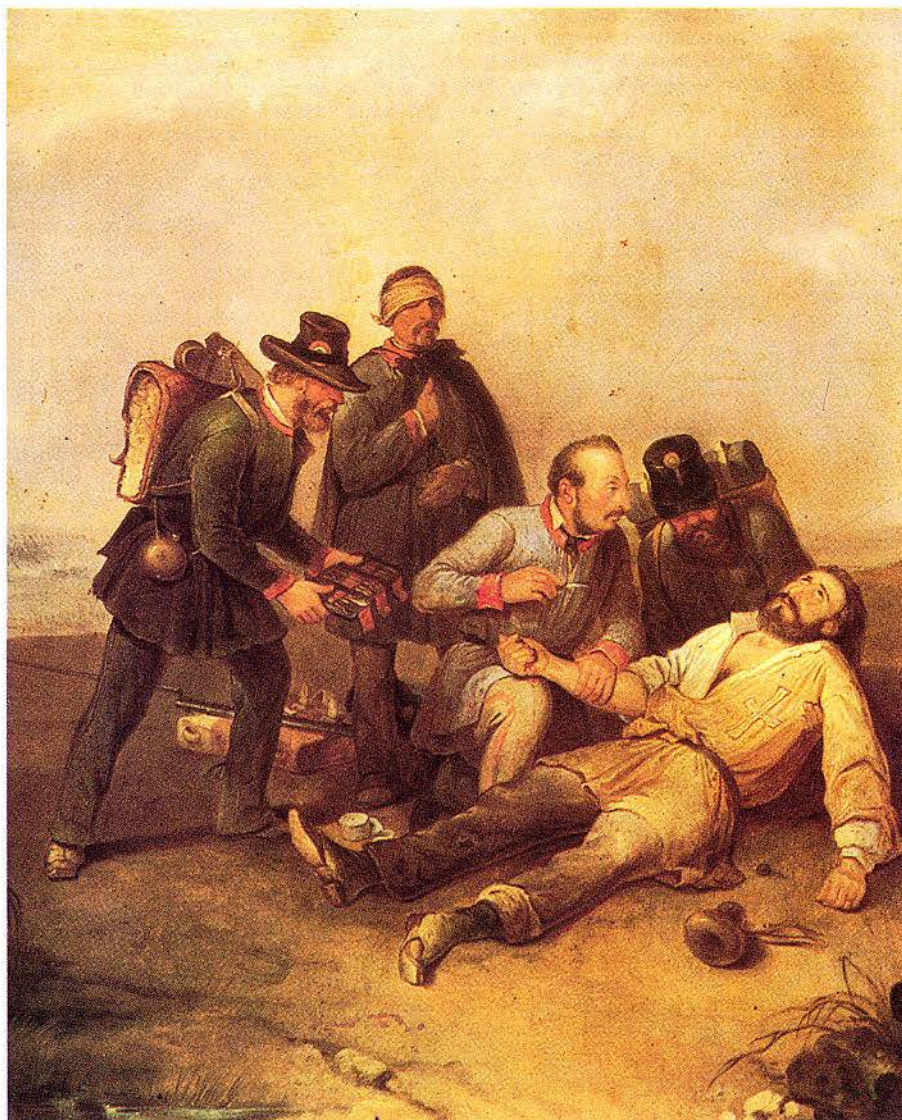
Republic (1849). There is one painting which is the representation of an act of abnegation, i.e. the picture by Giuseppe Moricci *Doctor Zanetti attending a wounded soldier*. Here the Florentine physician and fervent patriot, famous for having extracted the bullet which had wounded Garibaldi at Aspromonte (1862), is intent on healing a young volunteer, wounded in the battle just concluded. But the scene, more than according to the canons of realism, is sketched with the characteristics of an ex-voto.

Coming to the last phase of the first War of Independence — the Roman Republic — it is important to point out that one of the most active artists in representing not so much the bloody phases of the battles, but the sketches of military life, was Gerolamo Induno: he is definitely to be considered among the greatest painters of the Risorgimento, as is witnessed by the delicate scene *Bivouac of volunteers at the defence of Rome*, or by the series of "standing figures" of Lombard legionaries during the Lombard-Venetian war (1848).

In conclusion, we can affirm that though the major historico-artistic efforts, also from the qualitative standpoint, find their best expression in the realistic painting of the 1860s and, obviously, in the contributions of the Macchiaioli, (with Fattori at their head) also the paintings of the early 1850s can, though rarely, plead some cause for the dignity of the figurative vision present in some works depicting Italian History, painted in the early nineteenth century.

Pier Marco De Santi

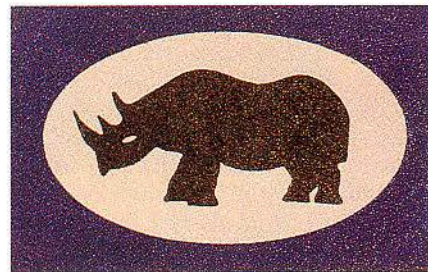
Giuseppe Moricci, *Doctor Zanetti attending a wounded soldier*.





6TH AIRMOBILE BRIGADE

A HIGHLY SUCCESSFUL EXPERIMENT IN GREAT BRITAIN



The UK was one of the last militarily developed countries to institute an airmobile unit as a reserve for a larger force, capable of moving rapidly to various sectors of the front with the assistance of rotor wing aircraft. The occasion for the experiment — which will bear fruit in the near future — was furnished by a combination of events which brought about the transformation of an armored unit into an airmobile unit.

At the beginning of 1983 the 6th Armored Brigade of the I Army Corps, the combat unit of the British Army of the Rhine (BAOR), began its conversion into an airmobile unit for the reason that a good part of the material which the constituent members of the unit should have received was not yet available, notably the "Challenger" tanks and "Warrior" tracked vehicles, while the "Chinooks" of the RAFG, which were designed to ensure the mobility of light infantry, were already in service. The experiment was planned in three phases: the first phase was devoted to the study of the unit's organization and to trial field maneuvers to test the concept of counterpenetration in the sphere of the Army Corps, of defense, and of rapid deployment. This phase was concluded at the end of 1984, with the Lionheart exercise. The second phase served to perfect the counterpenetration concept devised in the preceding phase and to experiment with use of airmobile units in support of ground troops for strengthening base lines and defending flanks. Study of the use of helicopter-borne forces in "aggressive operations" was also undertaken. This phase terminated at the end of 1986 and it may be said that at its conclusion the Brigade reached a stable configuration, if not a definitive one.

ORGANIZATION OF THE BRIGADE

The structure of the unit changed several times in the course of experimentation before arriving at the present configuration based on two battalions of airmobile infantry, the 1st battalion, "The Gordon Highlanders", and the second, "The Light Infantry". The predominant asset of

UNITS OF THE 6TH AIRMOBILE BRIGADE

- 1st Bn. "The Gordon Highlanders"
- 2nd Bn. "The Light Infantry"
- 19th Field Rgt. (only Commanding Officer, Battery Commanders, Observer Officers)
- 5th Fd. Sq. 26th Engineer Rgts.
- 3rd Rgts. Royal Army Air Corps
- 6th Airmob. Bgd. HQ Signal Company
- 35th Sq. Royal Corps of Transport
- Logistical units attached:
 - 3rd Field Ambulance (Medical)
 - 3rd Ordnance Battalion (Ammunition)
 - 6th Armoured Workshop (Maintenance)
 - 114th Provost Company (Military Police)



Top

The black rhinoceros, symbol of the Brigade.

Right

A senior officer issuing the final orders before the operation.



these units is their outstanding anti-tank capability, each battalion having at its disposal about twice the number of "Milan" launchers as a type "A" infantry battalion of the British Army. Each launcher has an impressive number of reserve missiles available while in action. Taken all together, the Brigade is in a position to employ practically the same number of missiles normally available to a whole division of the BAOR. Added to this is the fact that every infantry squad is furnished with twice as many machine guns as a squad in ordinary service, and that each battalion also possesses an additional 81 mm mortar. The alternative to the mortars would be fire support furnished by artillery units armed with 105 mm light guns, but, as an officer said to us, that would necessitate greater helicopter support, and at the end of the day the results would not be much different than those obtained from mortars supplied with modern ammunition. Beyond these differences with respect to regular infantry units, the two combat units of the 6th Brigade are wholly air mobile, including the supply units, and can transport by air all vehicles up to 10 tons. This is essential for rapid deployment, permitting, for example, transport of ammunition for immediate use directly on the vehicle, although this limits the number of vehicles, generally Land Rovers, to a couple per battalion. Of course, all units down to squad level are trained in loading and unloading of material from the helicopters by day and by night.

As regards artillery, the Brigade is staffed at the regimental level with a commanding officer, battery commanders, and observer officers. At Brigade Headquarters, therefore, there is a tactical command post at regiment level, while a few subalterns are attached to the infantry battalions. With this system, when the Brigade moves and takes up a new position it positions itself on the fire control center from which artillery within the radius of action of the unit depends, thus being freed of the necessity of equipping itself with medium and heavy artillery, which is incompatible with its highly air-mobile character. Experience has shown that it needs to possess its own fire control center capable of directing actions without depending on third parties, and a recommendation to this effect has already been made to higher authority by officers of the 6th Brigade.

The Brigade has permanent air support at its disposal and is the unit which works in closest contact with the "Harriers" of the RAFG, even though their support is not assured in a real situation. Knowledge of reciprocal problems and operational modes is favored also by work performed with the RAF regarding transport helicopters, which are, as is known, operated by the Air Force.

From the engineer point of view the Brigade has among its components a completely air-transportable company of engineers comprising two engineer platoons and one support platoon. The problem in this sector derives from the fact that at the moment air-transportable equipment efficient enough to excavate infantry positions

is not available, even though a few new models of light excavators were tried in the exercise we followed. There is much work to be done to provide an engineer component suitable to the Brigade, even though from some points of view the unit is already efficient. For example, in the mine-laying area the engineers are able to lay mine fields rapidly both manually and by using mechanical systems. As regards laying mine fields by helicopter, the officers of the unit do not consider the various systems proposed operational, and they are following with great interest progress being made on this kind of equipment in Italy as well as elsewhere. Still on the subject of placing mine fields, the focus of the 6th Brigade is on a light, automatic, and possibly modular system for mine laying which can be installed on the air-transportable vehicles presently furnished and to be issued in the future to the unit.

As regards vertical fire support, the Brigade is the only one in the BAOR to have at its direct dependence an Army Air Corps helicopter squadron equipped with the "Lynx" armed with "Tow" missiles and the reconnaissance "Gazelle". This squadron constitutes in a certain sense the mobile reserve of the unit and guarantees depth of fire and reaction on the flank, with responsibilities very different from those usually exercised in the sphere of the BAOR. During the "Eternal Triangle" of '86 the Brigade was able for the first time to have at its disposal in an experimental fashion an entire regiment of three squadrons of the Army Air Corps, which further increased the anti-tank capabilities of the unit. In addition, since the day seems near when a conversion kit will be available for adapting the "Stinger" to the launchers of the "Tow", it was assumed during maneuvers that the aircraft were equipped with two air-to-air missiles and six anti-tank missiles. It should be noted that none of these helicopters is ever used for other than its specific task, in particular for defense of the deployment area during the critical phase of taking ground. With the collaboration of the Army Air Corps, the Brigade has also experimented with direct command of a few RAF helicopters, notably four "Pumas", which furnished an intermediate transport component capable of transferring rapidly, under escort of the "Lynxes", infantry detachments to be employed as mobile ready employment reserves.

For air defense the Brigade has at its disposal a substantial number of "Javelin" missiles, which are employed principally to provide protection for helicopters on the ground and for their landing areas in both deployment and withdrawal phases of Brigade actions. At Headquarters there is also an air defense liaison officer who coordinates the movements of the unit relative to the particular sector, an arrangement which sometimes makes it possible to make use of the already existing area defense.

The logistical aspect of a highly mobile unit such as the 6th Brigade can be taken

lightly only at the risk of obtaining scanty results from this instrument. To be able to follow the other component parts, the logistical units have to be air-transportable; hence the presence of an airborne medical center capable of accommodating up to 600 wounded, which is in fact a small field hospital, unique in character. The need for a medical structure of this kind, larger than that of other brigades, derives from the lack of ground mobility of this unit, which can therefore count only on air transport for the evacuation of wounded. A transport platoon of the Royal Corps of Transport ensures mobility of logistical material while a maintenance unit, also air mobile, is responsible for the good working conditions of material, including that of the Brigade's vehicles which would be used in the event of deployment by road. The Brigade also has its own supply system and air-mobile front line supply units in support of the two infantry units.

The Command and Control system is based on an air-mobile Signal company consisting of two identical platoons, one serving at Brigade Headquarters, the other employed as an alternate unit which is used in the event of rapid movements of the Brigade. The unit is of course provided with terminals of the C3 "Ptarmigan" and "Wavell" systems. The unusual aspects of this headquarters compared to those of other units of the same level resides in the greater number of officers responsible for control of aircraft — in particular representatives of the RAF for the transport helicopters and of the Army Air Corps for the attack helicopters. The relationship with the helicopter units is such that by now everybody in Brigade and battalion headquarters knows all the pilots of the different squadrons by name, a fact which permits them to work in perfect harmony. Furthermore, according to the officers we talked to, the pilots and commanders involved in operations with the 6th Airmobile Brigade have proven enthusiastic about this kind of work which they look upon as something of a challenge, and the experimentation has been successfully carried on because personnel of the two Services have managed jointly to maximize the use of the assigned resources.

CURRENT PROBLEMS AND FUTURE OF THE 6TH BRIGADE

Speaking to the officer in charge of operations, Captain Legge, we brought up the sensitive subject of shortages and needed improvements: "Our chief current limitation concerns mobility on the ground. If the helicopters happen to leave us in the wrong place or if we have to move for some reason, we risk taking two hours to go a short distance after making a leap of several dozen kilometers in a twenty-minute flight. This is due to the enormous quantity of equipment our men transport. That is



why our planning is very detailed and is moreover done in a rather revolutionary way since we practically do not use aerial reconnaissance. We believe that no brigade here in Germany is able to deploy and prepare positions with our speed. Despite that, mobility on the ground is a problem and that's why we are testing a certain number of light off-road vehicles of British manufacture. What we are looking for is a small vehicle whose only task is to transport ammunition and any wounded. We want vehicles smaller than the present Land Rovers, which are too heavy for our purposes now. We haven't yet found a suitable vehicle, and our idea for the future is to have available from 20 to 40 vehicles per battalion, together with a few others for the supply units. The other problem we have got to resolve is that of excavation equipment for our counterpenetration role. When an operations plan has been properly drawn up we can be on the spot and ready for combat in a very short time, but if we have to dig in to "harden" the position, we lose a great deal of time because we lack mechanical support. We are trying out some light excavation equipment and we often use explosive charges to dig in quickly. Despite this, the problem remains because we are also not in a position to dig into the ground where we would probably find ourselves operating, given the normal peacetime limitations, and so appraisal of new systems is difficult". Besides the material, training too has had to be adapted to the new tasks: "Bearing in mind that we have been adapted to this role, we have had to be chiefly concerned with training in the use of helicopters. This training has to be considered under two aspects: that of the individual combat unit and that of planning at higher levels. As regards the company, we have had to train personnel and qualify them as helicopter handling instructors, so that each individual company would always have a well trained person in charge of training personnel in the movement and tactics required by use of the helicopter. All this does not present great difficulties. Where the problems begin is in the organization of mass use of helicopters at the battalion command level. When there is a large number of helicopters which have to load personnel, the organization of the embarkation area and the transfer of troops from the zones where they are hidden to the open areas where the aircraft land, all require great coordination".

While we were observing the loading of some units on RAF Chinooks we could see that there is a constant search for better use of space on board the aircraft so as to use fully its transport capacity. Besides loading the maximum number of soldiers, the constant concern of planners is turned to the effort to embark self-sufficient groups on the same helicopter and to study the arrangement of personnel on board to the end that the order of disembarking is closely linked to the immediate tasks of defense of the immediate landing area.



Concerning the future of the 6th Brigade, Captain Legge told us: "The third phase of the program, which begins in 1987 and should end in 1988-89, a date not yet established because planning is strictly dependent on the furnishing of new equipment, provides for remechanization of the Brigade. The army is, however, convinced of the utility of a unit of this kind, and it is therefore foreseeable that a new organization will take the place of the 6th Brigade as an airmobile unit, so as to make full use of all the work we have done in the field of organization, of tactics and arrangements, and of all the recommendations we have advanced. Of course, all the details of what we have done have been carefully recorded in the course of the past four years. As far as the 6th Brigade is concerned, it will go back to being the 6th Armored Brigade and will be supplied with new equipment, "Challengers" and "Warriors". It was precisely this interval due to the material procurement program which induced the General Staff to employ us in our present role. I think that the Army has for some time wanted to try out the concept of the airmobile organization, but it did not

Chinooks of the RAF embarking the men of the 6th Brigade.

have a unit available for trying it in the field. Now I think that we have done so much work and opened so many doors from the conceptual point of view that the British military establishment, a very conservative institution, has finally been convinced. They were used to thinking in terms of the tactics of World War II, while our mode of operations is directed to beyond the year 2000. It took four years to reach the goal, but now we have planted the seed and for this reason it is important that another unit take our place quickly". Isn't it possible for the 6th Brigade to remain air mobile and another to take its place among the mechanized units? "It is not impossible, but it is unlikely".

And we believe that a solution of this kind would not be at all unwelcome to the men who wear the emblem of the black rhinoceros, the most aggressive and the rarest of this animal's species.

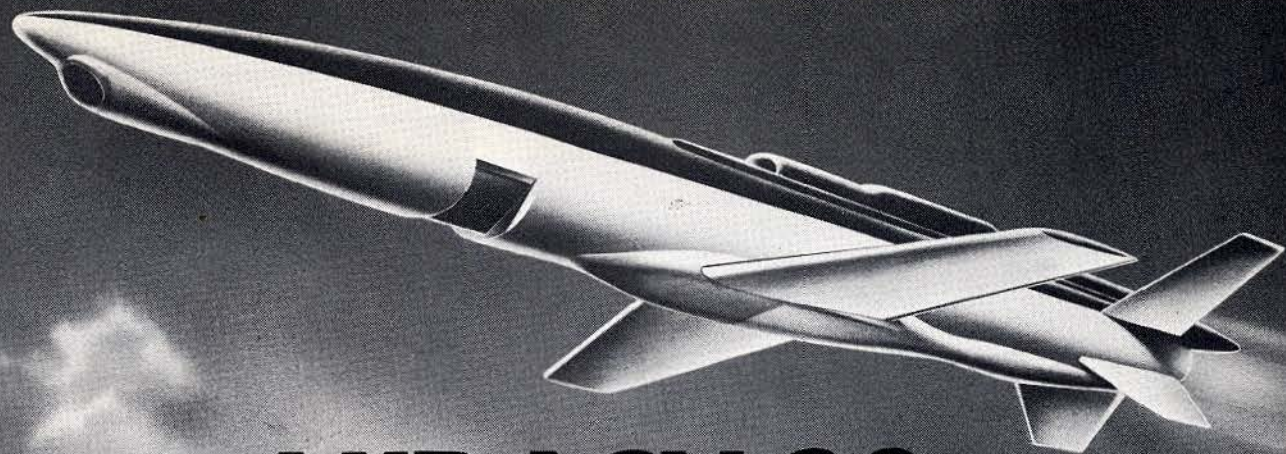
Paolo Valpolini

6TH

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IN GREAT BRITAIN



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meets the military specifications required by NATO standards.

The GE9/765 is a highly reliable field unit, realized with very advanced

technologies, and can produce electric power for general use as well as for telecommunication sets and battery recharging.

The Army Staff, in view of the positive results of technical and employment tests, has recently homologated a 10 Kw power station.

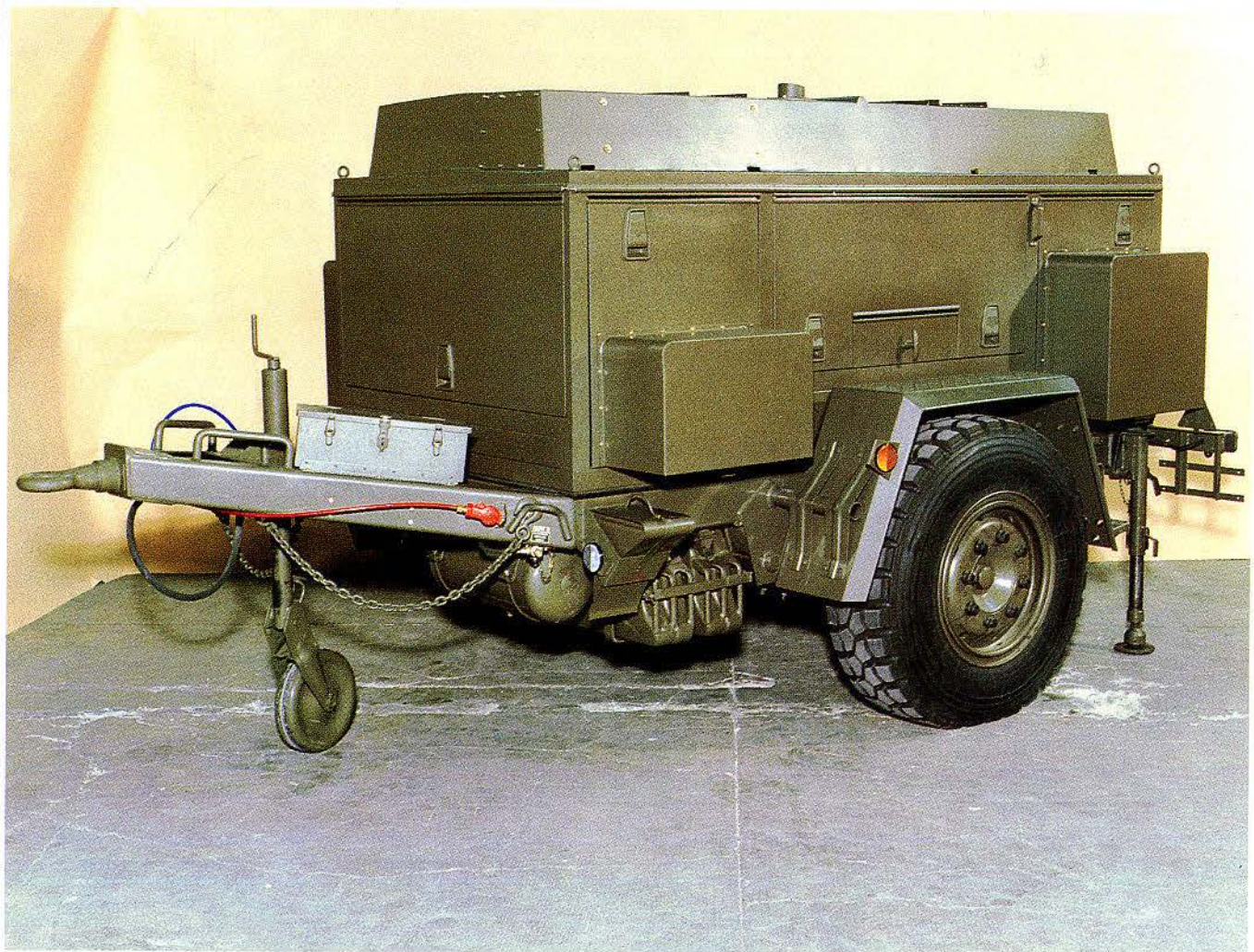
The unit, developed within a specific bid among Italian industries, will feed high-power radio stations and UHF radio-links, replacing the old American power units which have become unreliable.

The GE9/765 is also a reference point in the programme of standardization of power units, since it can be employed to meet many other power requirements of other Army materials (photolaboratories, repair trucks, shelters, missile electronic sections, jammers, etc.).

The two-wheeled power station

SPECIFICATIONS

Possibility of employment	: up to 2000m asl	Composition	: 2 power units, each consisting of:
Working temperature	: from -30° $+50^{\circ}$ C	• engine	: air-cooled diesel cycle, max power 18 Kw (3000 rpm);
Maximum road speed	: 80 Km/h	• generator	: 220V, 50 Hz, 125 KVA monophasic alternator
Maximum gradient	: 40%	Fuel consumption:	: 1.2 l/h
Maximum side slope	: 30%	Duration of use	: 50 h
Possibility of transport	: railroad, airplane, ship, helicopter		





CT6/101 HIGH-PERFORMANCE INTERMEDIATE CONCENTRATOR

The CT6/101, developed in compliance with EUROCOM specifications, can be installed on shelters, wheeled and tracked vehicles, in tents or in the open.

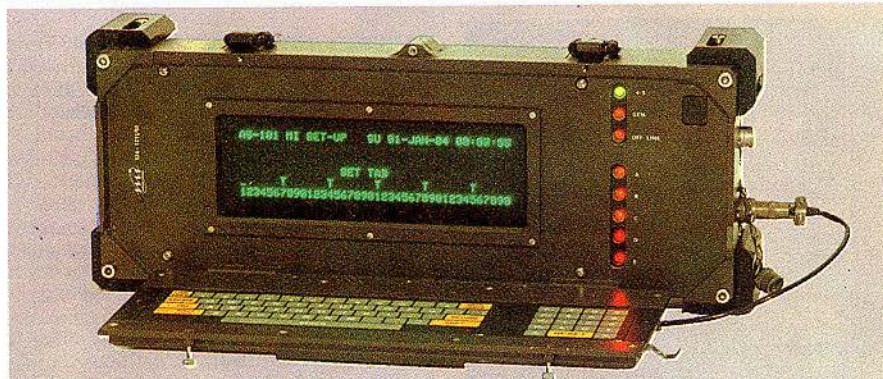
It permits up to 8 multichannel interfaces, with a maximum of 240 local users, connected through a delta standard multiplex of the MT-200 family.

Thanks to its diffusion-type routing system and to its reconfiguration capability, this set can establish communication nets with a high degree of survivability.

The supervision of the net and the reconfiguration of the user can be carried out through an operator, either local or remote; this could be a data terminal or an A-5101 external module.

The concentrator assures:

- continuity of communication, even in case of extensive destructions;
- limited size and weight;
- adherence to the mobility of the forces;
- high traffic capability;
- high flexibility of employment.



SPECIFICATIONS

Multichannel interfaces	: at 64,128,256,512 and 1024 kb/s	Power supply	: 220V AC ($\pm 10\%$) 21 $\div$ 29 V DC, with automatic switch
Local users	: up to 30, as an alternative to the 64 and 128 kb/s interfaces	User's services	: priority, faster numbering, line holding, transfer of communication, automatic transfer of call, diffusion, conference.
Stability of frequency	: $\pm 1 \times 10^7$ per month		
Operating temperatures	: from -40°C to $+55^\circ\text{C}$		
Consumption	: 180W from electric system, 150 W from battery		

OD/82 HAND GRENADE

The Army General Staff, in view of the positive outcome of technical and employment tests, has declared the new OD/82 offensive/defensive hand grenade "suitable for service"; it will replace the SRCM grenade, which is considered obsolete.

The OD/82 has been designed to meet specific military requirements for a unified grenade to be employed both in offensive and defensive actions.

It is a controlled-fragmentation, time fuze grenade, with an efficacy range of 5m and a safety range of no more than 20m.

The grenade's main operational characteristics are:

- high disabling power, without involvement of the thrower;
- time fuze operation;
- easy handling;
- controlled fragmentation;
- limited weight and size;
- fragments are released uniformly around the point of explosion.

SPECIFICATIONS

Weight	: 285 g	Safety distance	: 20 m
Length	: 83 mm	Main charge	: approx 112 g of component B
Max diameter	: 59 mm	Delay	: 4 $\pm$ 0.5 sec.
Efficacy at 5 m	: 85%		





L'ITALIA NELLA POLITICA INTERNAZIONALE

ANNO DODICESIMO: 1983-1984

ISTITUTO AFFARI INTERNAZIONALI

FRANCO ANGELI

**Istituto Affari Internazionali:
"L'Italia nella politica
internazionale 1983-1984"**
(Institute for International
Affairs: "Italy and International
Politics 1983-1984"), Franco
Angeli Publishers, Milan, 1986,
568 pages, 35,000 Lire.

The IAI's biennial report on Italian foreign policy and the state of the nation itself has come to represent an important occasion, both for assessing the current situation and for contemplating what the future holds in terms of Italy's foreign policy and her standing in the international community. Compiled by a "cast" of the country's foremost specialists in the field, the report — as well-documented and up-to-date as ever — includes a presentation of the correlations between Italy's foreign policy and her domestic politics.

From a military point of view, the pivotal issue in the debate is the discussion of Italy's political and strategic role within the context of Western defense and Mediterranean security. The analysis of the changes affecting Italy's strategies of deterrence and defense within the framework of the strategy of the Atlantic Alliance is particularly fitting. The discussion centers around the need to achieve as great a separation as possible between conventional defenses and short-range, field-deployed nuclear arms; at the same time, a doctrine of deployment must be defined for the Euromissiles. In this area, Italy's problems are essentially analogous to those of NATO's other European members.

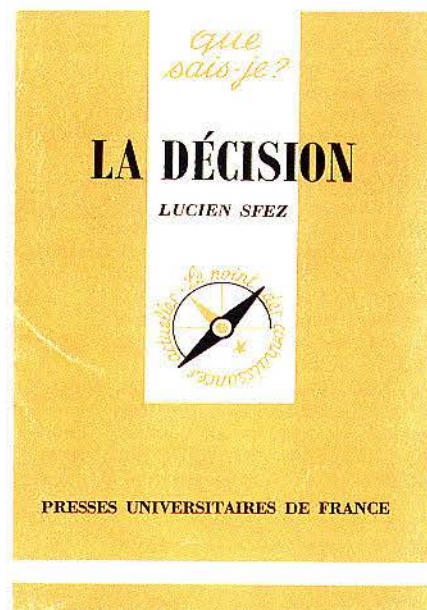
Italy's position differs markedly from that of her allies once the discussion turns to the Mediterranean. While the nation maintains a marginal position within NATO on account of its eccentricity as compared to the countries of the central region, her potential politico-strategic role in the Mediterranean is greatly reduced by the massive, predominant presence of the United States.

The central issue is the potential unification of the Mediterranean region, an area which, at present, remains extremely divided from a political, strategic and economical point of view. Only an all-encompassing vision of the entire Mediterranean problem, together with a preference for multi-lateral policies over a bilateral approach, can gain Italy a role of significance. What is more, the nation's limited resources, as well as her scarce potential for interventions, preclude the possibility of an autonomous role.

Italy's influence in the Mediterranean is very limited, in part because of the lack of coordination between the diplomatic, military and economic components of her national policy. If the country is not to be excluded from the centers where decisions affecting Mediterranean policy are made — a development which would pose a grave threat to national interests — then a precise policy must be delineated, a course which would necessarily involve taking sides amongst the various countries which line the shore and abandoning the comfortable position of equidistance currently maintained in our relations with the different states. Only an active promotion of Mediterranean unity will erase our allies' current perception of an Italian regional policy which is both ambiguous and, worse yet, subordinate to issues of internal politics.

This presence presupposes a rigorously unified management of our foreign policy in the areas of strategy, economics and political diplomacy. In terms of development, progress must be made both multilaterally, within the European framework, and bilaterally, through relationships, especially economic ones, with the states along the Mediterranean shoreline. The autonomous aspects of Italian military policy are essentially limited. Indeed, it is unrealistic to formulate intervention scenarios outside the context of multinational forces, in which case the contribution of the allies must be taken into account. In essence, the Mediterranean component of the new model for defense cannot be the reality which characterizes the Italian military instrument. On this point, we are in complete agreement with the in-depth, realistic analysis of the IAI. In the same spirit, we share the sentiments of all who would criticize potentially unrealistic, foolhardy proposals and

comic-opera neo-nationalist movements, phenomena which represent something quite different from a policy designed to give the Italian security apparatus a more national character in an effort to strengthen its ties with the West.



**L. Spez: "La decision" ("The Decision"). Presses
Universitaires de France, Paris,
1984, 123 pages, 25 F.**

Understanding decisions and decision-making processes represents a fundamental element in the professional life of anyone called upon to make decisions. The decision itself is not over and done with at the moment of the choice. It also includes the definition of the ends to be pursued and the goals to be reached. Furthermore, any decision is influenced by the degree to which the person making it controls the surrounding environment, including his or her freedom of action and any corresponding restrictions. Internal limitations are particularly important: in other words, the level of authority which the decision-maker possesses over the organization under his charge.

The book gives a concise, effective summary of the different concepts which have determined the way the nature of decision-making has been viewed at various points throughout history. The process of decision-making is based on a logical system of action. It assumes the existence of metaphysical and ethical standards, that is to say, an awareness of the position of the decision-maker in relation to the outside



universe, together with a sense of history and a value system which assigns the decision-maker a place within the environment in which he operates.

The three fundamental stages in the history of decision-making can be identified by analysing the changes evidenced in the above areas. The "classic" stage refers to the epoch in which Man moved about in what he considered to be a known universe. Within this framework, decisions were looked upon as pre-ordained phenomena which dictated man's actions in a universal order. Typical of this stage is Cartesian philosophy with its analytical, cascading decision-making process in which deductive rationality plays the dominant role and analysis precedes synthesis, overshadowing it, in a certain sense, as well. A fiction, this philosophical system provided an overly simplistic view of reality, a view which was accepted all the same — and more or less willingly — because it rendered the world a less complicated place by fitting it with an abstract, aprioristic framework. Up until the twentieth century, this was the dominant approach.

The complexity and global nature of problems, as well as the dynamic pace of their social and technological evolution, demonstrated the inadequacies of the classic approach. The age of certainty had come to a close, and the age of uncertainty, tied to a future dependent upon probability, had got under way. The old construction of an indivisible goal reached by a single line of action was replaced at the beginning of this century by a decision-making process which recognized the existence of various means, all equally valid from a rational point of view, for reaching the same end. This approach, typical of the game theory, also proves overly simplistic and limited, ignoring, as it does, the decisive role of social forces and value systems. In other words, it accepts as a given the existence of a rational system which provides an unwavering definition of the goals to be pursued as well as an unfailingly stable set of value systems for reference purposes.

The change taking place in our day and age is equally as profound as that which led from the age of certainty to the age of probability. Man, his

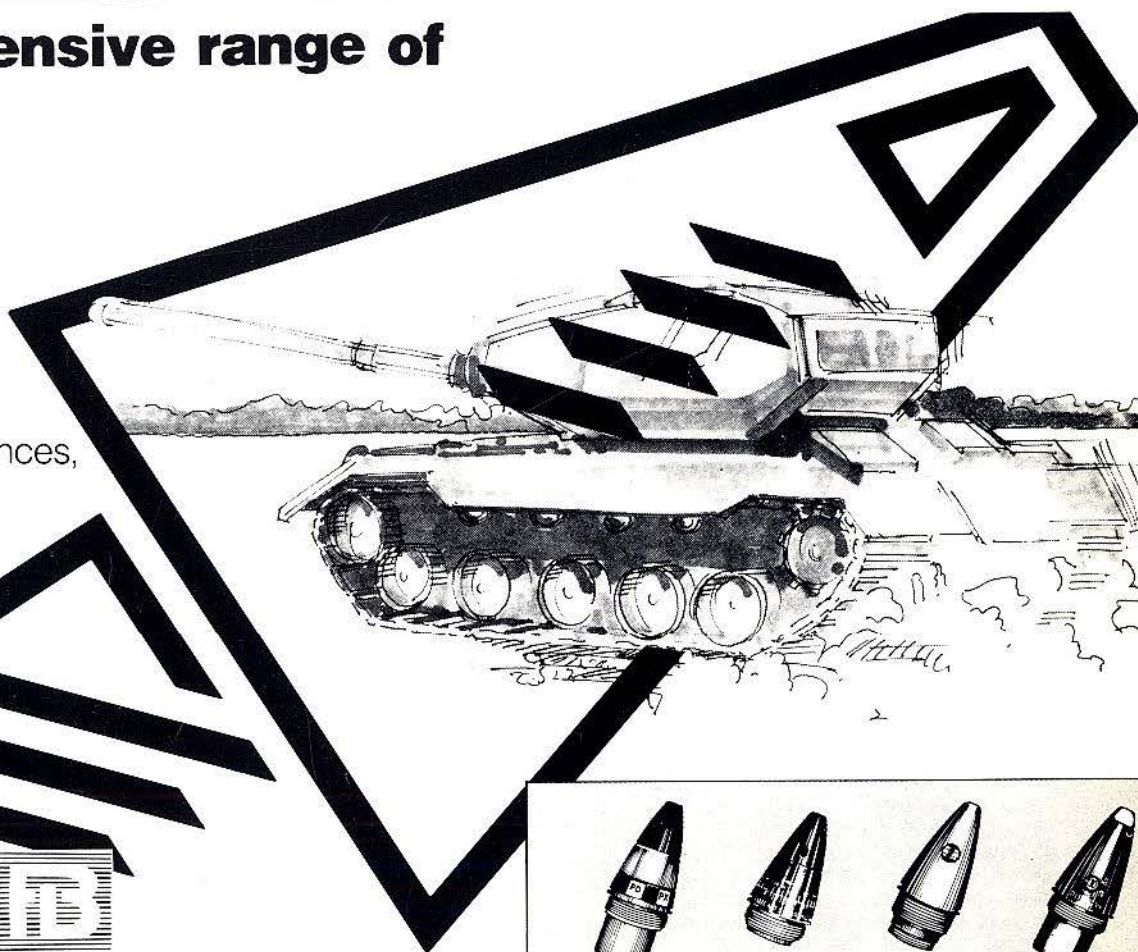
environment and the universe: all are considered to be mere products of chance. The future, no longer a simple extrapolation of the present, is created, irrational factors are considered on the same plane as rational ones. The fundamental problem becomes one of defining the ends to be pursued. The single-discipline approach is replaced by a process involving a variety of disciplines; a framework involving a number of different reference points has given way to a conception of auto-reference; rationally is pushed aside by multi-rationality.

Naturally, the earlier theories do not disappear entirely; their field of application is simply narrowed down to include problems of execution and nothing more. The true nature of the decision-making process has become freer and more creative, able to work towards a variety of ends through a number of different rational techniques, all of which are geared more towards the future and the construction of new realities than towards the discovery and attainment of external truths. Reality is no longer taken for granted, but constructed and created.

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Avoiding Nuclear War

Common Security as a
Strategy for the
Defence of the West

Stan Windass (editor)
Paul Walker
Stephen Shenfield
David Greenwood
Philip Windsor

Foreword by General Sir Hugh Beach

Brassey's
Defence Publishers

Various Authors: "Avoiding Nuclear War". Brassey's Defence Publishers, London, 1985, 174 pages, £ 8.50

At one and the same time, nuclear weapons represent the central element of the West's security system as well as one of the more controversial points to have affected — beginning in the fifties — the politico-strategic unity of the Alliance, European-American relations and the plausibility of the NATO doctrine of deterrence and defense.

Most approaches to the problem of nuclear arms have been extremely limited in scope, if not outright simplistic and Manichean. In part, this is due to the decidedly esoteric nature of many of the theoretical elaborations drawn from the doctrine of deterrence and the so-called nuclear strategy; in addition, one could point to the cumulative effect of a number of factors which are not all military in nature, but also political, ideological, psychological and economic. The very nature of the strategy of flexible response — which includes elements of both deterrence and defense — has inevitably produced a basic ambiguity, leading to the existence of disagreements and opposing interpretations between Europe and the United States. The Europeans have always emphasized that this strategy should primarily be seen as a deterrent, if not a mere statement of purpose. The United States, on the other hand, has felt compelled to highlight — and, at times, to raise above all other considerations — the defensive-operational nature of the strategy, an

aspect which is tied more or less explicitly and directly — not to mention inevitably — to the eventual outbreak of a geographically limited war in the European theater of operations.

The various proposed alternatives to the current NATO strategy (no first use, partial nuclear disarmament in specified areas, conventional deterrence, territorial defense, non-violent defense, etc.) have never succeeded in providing a convincing solution to the problems of European security: in other words, a solution which could take the place of a system based on the coupling of conventional defenses and tactical nuclear arms.

The book offers a complete overview of these tremendously relevant issues, all of which lie at the heart of the strategic debate in Europe, in part for the very good reason that, while Europeans can certainly do something to support the adoption of these proposals, they have a very limited say in the global strategic dialogue between the US and the USSR on the subject of strategic offensive weapons and anti-missile defense systems.

Undoubtedly, an eventual loosening of the existing ties between conventional defenses and nuclear arms represents an extremely attractive prospect. It must not, however, lead to a drop in the level of guaranteed security which Europe receives from the American nuclear "umbrella". Our desires must be tempered by the "subtle art of the possible". Great leaps forward could lead to imbalances, producing tensions, crises and potential conflicts which would prove very difficult to control. In particular, it is highly unlikely that the Europeans can succeed in mobilizing the economic, technological and human resources needed to guarantee themselves a reasonable level of conventional defense. The problem is not that they lack these resources, but that any attempt to shift funds from other segments of social commitment, or from productive investments, would result in significant political difficulties. Only a thoroughgoing reform of the institutions and the mentalities involved will put this goal within our reach. Technology alone can not provide a satisfactory solution. Indeed, there can be no technological or military-strategic solution to a problem which is strictly political in nature.

by Carlo Bess

STATO MAGGIORE DELL'ESERCITO
UFFICIO STORICO

ODDONE TALPO

DALMAZIA
UNA CRONACA PER LA STORIA
(1941)

Con prefazione del Prof. RENZO DE FELICE

ROMA 1985

O. Talpo: "Dalmazia, una cronaca per la storia (1941)" ("Dalmatia, an Historical Chronicle (1941)") History Office of the Army General Staff, Rome, 1986, 1,175 pages, 25,000 Lire.

We are pleased to announce the appearance of "Dalmazia, una cronaca per la storia (1941)", a book written by Oddone Talpo with a foreword by Professor Renzo De Felice; the work is published by the History Office of the Army General Staff.

The importance and the salient features of this volume have been underlined by Italy's foremost historian, Professor Renzo De Felice, Chairman of the Department of Modern History at the University of Rome. In his foreword to the book, he writes: "Of all the various works published by the History Office of the Army General Staff this volume by Oddone Talpo undoubtedly deserves a special place. The reader is not faced with one of the usual study-reports on military operations carried out along a given front; nor is this a technical study of a given unit, or, much less, a work designed to popularize and commemorate the events in question.

Oddone Talpo has produced a different type of work. Though it does, indeed, provide a reconstruction of the military operations carried out in Dalmatia between 1941 and 1944, it accomplishes this from a perspective whose unique slant proves much less technical than that adopted by the other works published under the auspices of the History Office. The military operations represent only one facet of Talpo's reconstruction, and, upon examination, they are not even the most



important facet. Along with the military considerations, Talpo treats a whole series of other factors connected to the Italian occupation of Dalmatia during the Second World War, dealing with everything from economic and social issues to administrative, judicial and scholastic matters, etc., including the more clearly and immediately political or "diplomatic-political" topics: topics to which each of the individual points taken into consideration can eventually — though to a greater or lesser degree depending on the specific instance — be tied back. In the author's eyes, these last elements — as he writes in his introduction to this book — present themselves against the backdrop of "the ambiguous and unstable nature of the relationship between Rome and the government of Zagreb, the contrast between the evaluations coming from the Italian military commanders and the country's diplomatic representatives in Zagreb, the error of having an enemy for an ally (the Croats) and a friend for an enemy (the Serbians), the massacres perpetrated by the Ustascia, the armed

reaction of the Orthodox faction, the goals of the Cetnics and the resistance movement". Plus, *dulcis in fundo*, the increasingly difficult relationship between Rome and Berlin.

Mastering such a vast amount of complex, thorny material without the aid of an existing historical literature worthy of the name (reference works which, at the very least, would prove helpful on individual questions or issues) is certainly not an easy task. Anyone would experience difficulty, as was obviously the case for Mr. Talpo, who is not a "professional" historian, but was stimulated to take on his task by a set of varied interests and motivations, among which a feeling of "pietas" for his homeland was certainly not of secondary importance. Indeed, this fact is highly significant and, from a number of points of view, practically invaluable.

The 1,175 pages of the book are divided into the following chapters: The siege of Zara and the taking of Tenin - The occupation of Dalmatia and the civil commissariat - Diplomatic negotiations and legislative issues relating to the

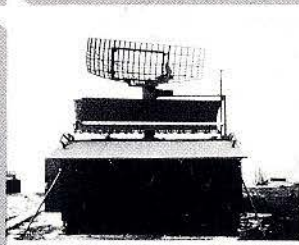
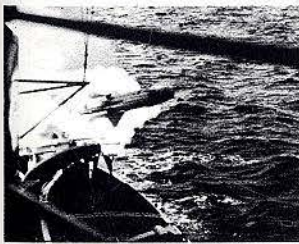
annexation of Dalmatia - The Italian Army faced with the massacres perpetrated by the Ustascia and the reactions of the Serbians - Problems and initiatives of Governor Bastiani - The administrative organization of the Dalmatian government - The garrison in the third zone and the failed occupation of Croatia in its entirety.

Each chapter comes complete with copious notes indicating the sources for documents taken from the archives of the history offices of the Army, Navy and Air Force General Staff, as well as the Central Archive of the State, the Chamber of Deputies and personal accounts from participants in the actual events. These are followed by reproductions of documents which, for the most part, are either unpublished or little known: in all, these documents number 134.

At the end of the volume is a chronological review of the most important events, together with an index of people's names and a bibliography.

di Mario Iannacci

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SMA's basic product lines and business sectors include: High definition and discrimination coastal radar control stations, both for maritime traffic management systems and military application (anti intrusion, coastal defence, mine splash detection); Shipborne navigation /search radars devoted to low, very-low air coverage (anti sea skimmers); Missile active homing heads, provided with a variety of ECM devices, for SSM (OTOMAT MK2) and ASM (Marte MK2) applications; 360° coverage search and navigation airborne radars for helicopters and maritime

patrol aircraft; Standard Pod contained search radars for fixed wing aircraft to be employed in conjunction with ASM; Integrated search and tracking radars for A/A defence to be employed both on specialized trucks (OTOMATIC) or on semi-mobile/fixed station for point defence; applied research aimed toward millimetric waves (up to 100 GHz) in active and passive sensors (radiometer); Duct analysis and electromagnetic propagation forecast.

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ETAT DES OFFICIERS DE S. M. LE ROI DE SARDAIGNE



GARDES
Cr.ⁿ 1659
Colonel

SAVOIE
Cr.ⁿ 1660
Lieutenant Colonel

MONTFERRAT
Cr.ⁿ 1661
Major d'Brigade

PIEMONTE
Cr.ⁿ 1664
Major Commandant

SALUCES
Cr.ⁿ 1672
Capitaine des Grands

AOSTE
Cr.ⁿ 1696
Capitaine Major

Corps R.^l d'Artillerie
Cr.ⁿ 1682
Capitaine

R.^l ALLEMAND
Cr.ⁿ 1697
Capitaine-Brigadier



LEGION
Cr.ⁿ 1774

CAMPMENTS
Cr.ⁿ 1774

ARTILLERIE d.B.
Cr.ⁿ 1774

INVALIDES
Cr.ⁿ 1775

Corps R.^l d'Ingénieurs
Cr.ⁿ 1775

Compagnie FRANCOISE
Cr.ⁿ 1780

GENEVOIS
Cr.ⁿ 1780

MAURIENNE
Cr.ⁿ 1780

IVREE
Cr.ⁿ 1780



GARDES du CORPS
Cr.ⁿ 1669
Capitaine

Dragons du ROI
Cr.ⁿ 1675
Colonel

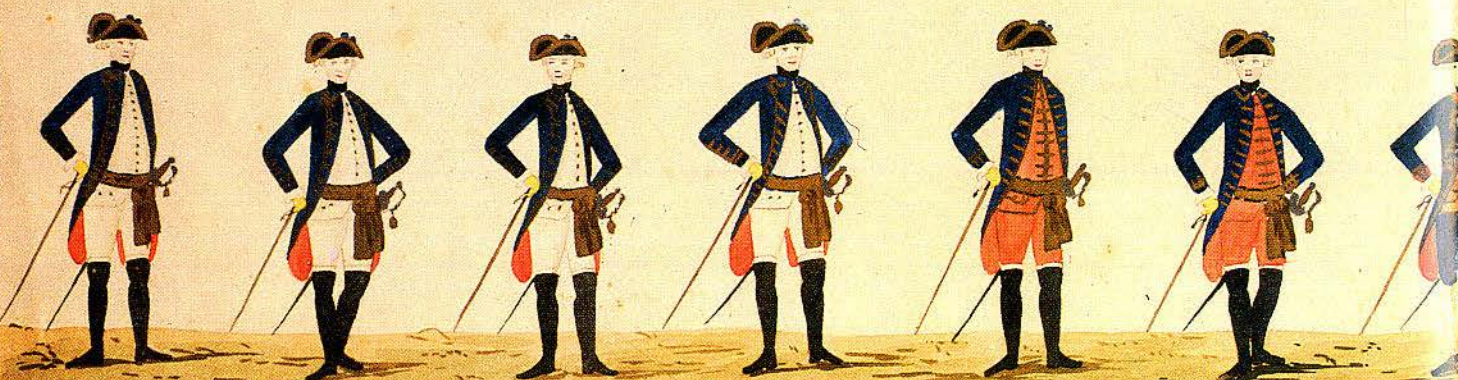
CAVALERIE LEGERE
Cr.ⁿ 1679
Lieutenant Colonel

Dragons de PIEMONTE
Cr.ⁿ 1691
Major

PIEMONTE ROYAL
Cr.ⁿ 1691
Capitaine

SAVOIE Cavalerie
Cr.ⁿ 1699
Capitaine

Dragons de SARDAIGNE
Cr.ⁿ 1726
Lieutenant Colonel



GENERAL

LIEUTENANT General

MAJOR General

BRIGADIER

GOUVERNEUR
Brigadier

COMMANDANT de Fort
Comde.

GARDE
Colonel

SUIVANT LE NOUVEL ETABLISSEMENT ET UNIFORMES dur



MARINE Gré 1701 Major Général	CHABLAIS Gré 1702 Lieutenant	COURTEN Suisse, Valetan Création 1700 Sous-lieutenant	TSCHARNER Gré 1733 Sous-lieutenant	REINE Gré 1734 Adjutant-major d'infanterie	GRISONS Gré 1742 Adjutant-major d'infanterie	SARDAIGNE Gré 1744 Aide de Camp	FREGATE Création 1749
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TURIN Création 1715	NICE Création 1715	MONDOVI Création 1715	VERCEIL Création 1715	AST Création 1715	PIGNEROL Création 1715	CASAL Création 1715	NOVARE Création 1752	TORTONE Création 1752
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ANTONIO VIESTI
Tasks, Doctrine and
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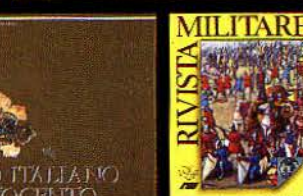
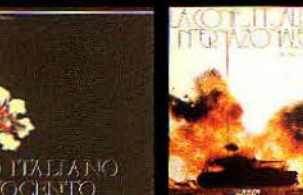
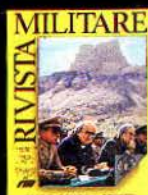
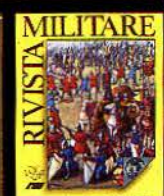
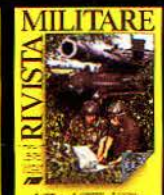
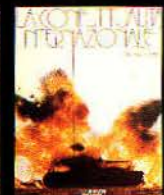
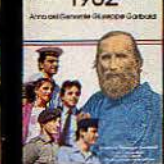
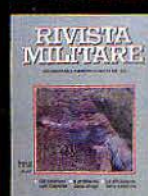
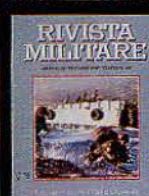
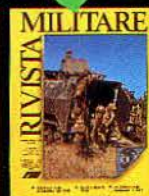
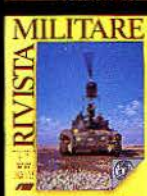
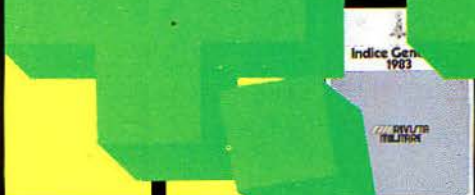
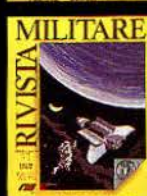


RAFFAELLO TETI
The Aeronautical
Industry
Its Role in the new
Scenario of
International
Cooperation



GHINO ANDREANI
Operation "Brassard"
the French landing at
Elba in June 1944

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TASKS, DOCTRINE AND STRUCTURES OF THE ARMY



The armies of the '80s are organisms more vital than ever and undergoing a continuous evolution. The Italian Army, in order to guarantee the fulfillment of its institutional tasks, cannot back out of the obligations deriving from such vitality but must meet them, adjusting to the rapid development of the surrounding reality.

Its dynamics is in fact connected with multiple aspects, such as the geostrategic picture, the rapidly growing scientific and technological progress, and the national social reality.

The latter, in particular, must be considered in the recent processes which have caused changes in the order of values in the individual and collective sensitiveness.

The limited interest in the military institutions is, moreover, an aspect of the Italian society that must be taken into account, considering that it shows a fundamental tendency to stability, with the exception of very particular occasions.

The military instrument is a living part of this society, from which it receives its ferments of growth, its human element and its financial resources, as well as bonds and constraints. The Army must offer the country a clear image of itself, both in its present reality and in its future dimensions, so that its needs be understood, and to avoid being regarded as a foreign body instead of an essential component proportioned to the role legitimately played by Italy in the international arena.

The Army, like all other organizations, receives different spurs, which it must mediate in a framework of continuous confrontation, almost a fight, between what is necessary and what is available. Its components are involved in a process of changes which, in order to be correctly managed, requires that its "centre of gravity" be anchored to a realistic medium and long term planning, in order to avoid dangerous rushes forward or unexcusable delays.

In short, it is a matter of achieving, each time, a situation of dynamic balance.

But the needs for change cannot be the only parameter of evaluation in the pursuit of an efficient and reliable military instrument.

Together with them, one must also consider the necessity of a relative stability of the structures, in order to avoid repeated and too rapid changes, which can lead to drops in performance, which are tantamount to drops in operativeness, unacceptable to the institution.

The pursuit of balances, therefore, must go in two directions: the first, of a managerial nature, to obtain solutions consistent with the resources available; the second, of an operational nature, to ensure a fundamentally stable instrument, in which the changes may occur without causing crises. To attain this goal, the structures must constantly be updated in order to prevent their obsolescence and the ensuing necessity of a total renewal.

THE TASKS OF THE ARMY

The Army's tasks derive from the laws that regulate the operations and life of the Armed Forces as institutions of the State.

These normative references have at their summit the Constitution of the Republic itself which, albeit without indicating them explicitly, entrusts to the Armed Forces strictly defensive tasks. This indication can be desumed by reading articles 11 and 52, both of them well-known. In the first, the Constitution "repudiates war as an instrument of offence" and as "a means for solving international disputes".

The second article points out to the citizens the sacred duty of "defending the Fatherland" and establishes the principle that military service is mandatory.

This duty is concretely and fully formulated in Law no. 382

of 11 July 1978, "Norms of principle on military discipline".

Article 1 of the law, in confirming the constitutional norm, points out two other needs, to the meeting of which the Armed Forces are called to concur: the "safeguard of the free institutions" and "the welfare of the national community in case of public disasters".

Article 1 of the Law on principles is therefore the normative source of immediate reference for the complete understanding of the Army's tasks.

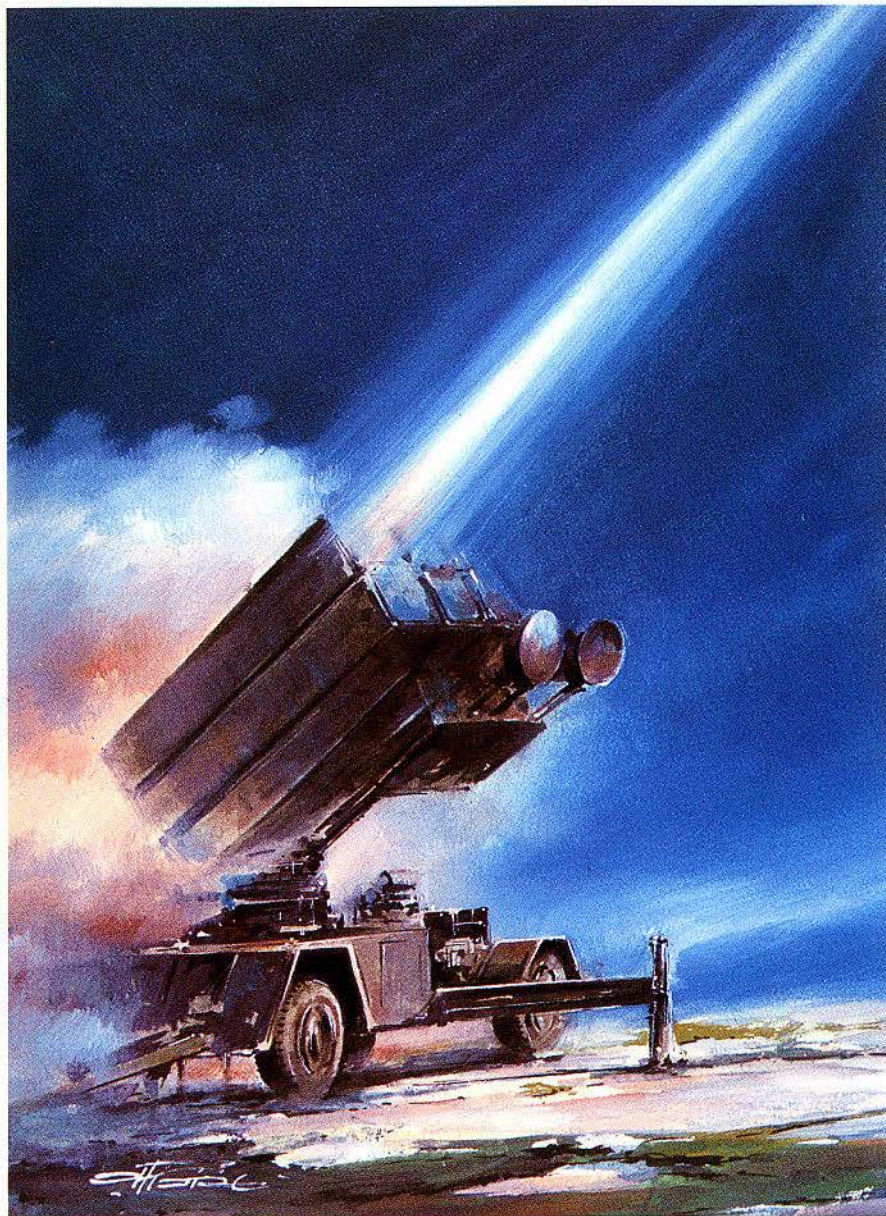
The logic consequence of the defensive choice was Italy's participation in the North Atlantic Treaty which, while allowing the development of forms of political, economic, social and cultural cooperation, constitutes, first of all a **military alliance of a defensive character**, with the foremost aim of preventing aggressions against member countries and to repeal them, were they to occur.

Within the Alliance, Italy represents a hinge between the Central European deployment and the Southern one, playing a most important role, both as regards the land defensive lines and the control of the Mediterranean.

Especially in relation to the land forces, the responsibility of the defence of the Northeastern theatre is entrusted to an Italian general, who is in the chain of command of the Alliance.

Within this normative framework, deriving from national and international norms, the government Authorities, in the "White Paper 1985", have further defined the tasks of the Armed Forces, expressing them in five missions:

- defence to the north-east;
- defence to the south and of the maritime lines of communication;
- air defence;
- operational defence of the territory;
- actions of peace, security and civil defence.



"Skyguard Aspide" A/A light missile system, for the defence against targets at low and very-low altitude.

the existing balances in the deployment of the forces. On the contrary, it emphasizes the requirements of strategic mobility of the units assigned to the defence of the territory.

Finally the fifth mission refers, as I have said, to the necessities of peace, security and assistance in case of public calamities.

Events like those in Lebanon and the earthquakes of the last decade are present in the memory of all of us, therefore I believe it would be superfluous to linger on this subject.

These are the missions that concern our Army, for which the White Paper points out also the relevant operational model; i.e. the requirements in terms of structures and weapon systems.

To these requirements one must add the appropriate "background" capable of supplying adequate support, in the widest sense of the word: I refer to training of personnel, best possible employment of resources, doctrinal research, study and testing of new structures, development and experimentation of new materials, acquisition of up-to-date weapon systems, etc., besides, of course, the actual logistic support.

Therefore, the definition of the tasks leads to the identification of the requirements, at least in their main lines

But, for the reasons I have said before, the requirements must be compatible with what the country can realistically allocate to defence, which is only one of the functions entrusted to the State.

The definition of the instrument is the result of this comparison between requirements and availability, on which I want to insist once more with particular force. It is the synthesis of a dialectic process which precisely embodies the national will; a will

Of these missions, the first, third, fourth and fifth are of specific importance for the Army.

In particular, the first is the most onerous one, because it is "immersed" in the context of the Alliance and takes as its own the concept of advanced defence, accepted by all member countries.

The third mission refers to the anti-aircraft defence of point objectives located on the territory (the requirements of anti-aircraft defence of the units in the Northeastern theatre are included in the first mission).

The fourth mission concerns the defence of the

part of national territory not considered in the first. This mission has been receiving particular attention for some years. In fact the factors of instability in the Mediterranean have brought the spotlight on the problems of defence in the southernmost part of the territory. But it should be remembered that these factors, although related to a threat with a high ratio of probability, entail a practically negligible risk as far as the territory is concerned. It is appropriate to stress here that, on the technical-military plane, the increased instability in the Mediterranean does not modify

that on the one hand assigns the tasks and on the other allocates human and financial resources. To say that the Army is the expression of the country is not, therefore, a commonplace devoid of contents but an objective reality, which becomes even more evident if one considers the human element, not only for its professional values but also as vehicle of the demands, contradictions, yearnings and cultural values that permeate the Italian society.

In planning the military instrument these considerations must be taken into account, in order to avoid conceiving an unfeasible model. A model which could be superb as a laboratory exercise, but utopian and chimeric in its realization.

The Army General Staff, the body at the summit of the Service, is fully aware of the socio-economic situation of the country and is especially engaged in the effort of defining an optimum dimension for this instrument, outlining valid and realistic structures.

The other direction in which it moves is the research of cost-effective methodologies, capable of ensuring a maximum possible benefit from the financial resources available.

The finished "product" that the Army General Staff wants to obtain is a credible defensive instrument, adequate to Italy's role within the Atlantic Alliance.

THE EVOLUTIONARY TREND

Having defined the tasks and outlined the socio-economic environment in which the Armed Forces live, we can point out the Army's evolutionary trend in the interconnected fields of doctrine and armaments.

The ancient dilemma of the relationship between military thought and technology has not been resolved yet, and it is difficult to say whether it is the former that leads the latter or the other way around.

In my opinion, one should "link" scientific evolution to a

coherent conceptual development according to the relation means/goal. I believe that the technological development must be controlled and directed in order to obtain, with the resources at our disposal, the maximum possible defensive capability, within the relation cost/effectiveness or cost/performance mentioned above.

The evolution of the military thought has concerned also the doctrinal references known as principles of warfare. This does not mean that they have changed. The principles as such are immutable, but they adjust to the everchanging reality. In their essence they have remained the same, what has changed is their space/time dimension and, consequently, their forms of application. It is sufficient to look back at the second world conflict to observe how, since then, spaces have expanded enormously both horizontally and vertically, together with a drastic shrinking of the times of action and reaction. This necessarily modifies the ways in which the immutable principles of warfare — manoeuvre, concentration of forces, mass, unity of command, surprise — are expressed and realized. Let's consider surprise, for instance. Electronic technologies have practically reduced to zero the time in which information is received. The use of interconnected differentiated sensors permits a real-time control of the entire surface surveyed. This changes the classic concept of surprise completely, up to the point of engendering doubts about the possibility of its application. The statement that there is no surprise left but the technological one, does not appear exaggerate. Nevertheless this does not change the reality of the battle, which will be won by the Commander who, by any means — psychological, technical or operational — surprises the adversary with the "invention" of new ways to operate without being discovered in advance. But also

the other principles have taken new forms. The employment of highly selective weapons, with sophisticated guiding systems, gives a new sense to the concepts of manoeuvre and concentration. The forces, in fact, assume some and more dispersed deployments, significantly increasing the necessities of manoeuvre and producing new problems of command, most of them related to the possibility of exercising it.

The transformation of the traditional concept of command into the more modern synthetic expression C³I (command, control, communications, information) has not been accidental.

Moreover, information has probably acquired the role of a new principle.

Command has ceased to exist in the traditional sense. Its modern conception requires the backing of sophisticated systems capable of managing a large flow of complex information.

The shrinking of the times available for reaction demands delegations of command unthinkable just a few years ago.

It may happen that the response to certain types of threat are selected at technical level by the officer responsible for that specific task, who decides and employs the systems deemed more suitable, often based on data supplied by a computer. The commander just monitors the operation and, in case, puts his veto. These new situations entail deep changes, not only in the exercise of command but also in its philosophy.

Within this picture of symbiosis, of perfect integration between military thought and technology, the Army performs a guiding and leading function in many technological sectors. I shall just mention, among the most important:

- systematics in general;
- optoelectronics;
- high-performance motors;
- ultra light alloys;



"Scout" 4-wheel drive light armoured car.

- automation of firing procedures;
- advanced propellants;
- technology of high-density penetrators for kinetic ammunition;
- robotics;
- fiber optics;
- techniques of electromagnetic survival.

I have mentioned only some of the most significant technological sectors, but I don't want to forget the so-called "expert systems" and the automation of the Command Posts, which show to what degree research has been spurred on by the Army.

I shall not dwell upon this matter any longer because the subject of the integration military thought/technology, i.e. Industry/Army, would lead us too far.

Going back to the evolutionary trends of the Army, we must say that these move in two directions:

- one, of thought, to adapt the doctrine to the new reality of the battlefield;
- the other, organizational, to adjust the structures, strictly correlated with the weapon systems, to the new requirements of employment.

As far as the doctrinal evolution is concerned, it must be premised that the conceptual assumptions stated by the present circulars of the series 900 are still valid. They develop in conformity with the strategy of the Alliance, which binds the nuclear weapon to criteria that envision its employment as:

- **limited**, as concerns number and power of the weapons;
- **selective**, i.e. subject to the

adoption of particular criteria in selecting the targets;

- **bilateral**, meaning that the recourse to nuclear weapons by one of the belligerents will inevitably determine a similar reaction from the adversary.

Also our doctrine, adopting these principles, is based on the assumption that the destructive power of the existing nuclear weapons and the ample possibilities of retaliation, strengthen the conviction that a conflict developed with an unlimited employment of armaments will lead to a total depletion of energies and to the destruction of the entire resources of both sides.

From this point of view, the possible success of the aggressor is of no significance: no end can in fact justify the risk of jeopardizing the survival of a State as organized community.

On the strictly military plane, a conflict of this kind escapes every doctrinal logic; therefore all our doctrine — although not ruling out the possibility of employment of nuclear weapons in the course of a conflict — is practically and almost exclusively aimed at the description of a conventional war.

Recently, within NATO, we have seen the emergence of new conceptions such as FOFA (Follow-on Forces Attack), which envisage the intervention, mostly with fire, on the second enemy echelon, before its introduction in combat.

This is still a controversial subject and presupposes the availability of extremely sophisticated and expensive means for observation and fire. Therefore, in the national sphere it can only be accepted, for the time being, as a matter of principle.

Nevertheless the near-at-hand introduction of longer-range weapon systems, such as multiple rocket launchers, brings us closer to the implementation, at least partial, of the concept.

The criterium of FOFA will be met only when the Army owns advanced conventional missile systems, with a range of more than 100 km. The future acquisition of these systems seems indispensable for the efficiency of the Service.

These systems, together with the advanced ones for the management of C³I, such as CATRIN and SIACCON, will enable us to make decisive steps in this field, giving concreteness to the concept of "conventional deterrence", which would derive from the availability of weapon systems capable of preventing the resupplying of the enemy's effort, stopping them long before they enter in contact with the units deployed in defence.

In addition to the new concept of "conventional deterrence" — the discussion on which, within the Alliance, has been going on for some years — at home we have been exploiting new possibilities of employment for light, and mostly armoured, infantry.

At present and for the immediate future, its employment is foreseen mainly within the 4th and 5th missions. With an improved strategic mobility, they will in fact provide the best answer to the problems posed by the permanent Mediterranean instability. For the distant future new lines of thought are being focused, starting from the following considerations:

- the problems in the northeastern area, caused by changes in the natural environment, such as urbanization, increase of man-made structures, the presence of cultivated fields with high obstacle value, limiting the employment of substantial tank formations;
- the need for units which, for their high capability to concentrate and disperse within very limited times, are in a position to survive in a battlefield characterized by more and more lethal weapon systems;

- the need for units capable of rapid interventions on wide spaces, also in the rear zone.

These needs lead to consider new aggregations of forces in which tank units, mechanized units and light armoured units could operate together.

Besides the traditional tasks of area counterinterdiction, control of the rear zones, combat in inhabited or wooded areas, etc., the light units could be charged with the task of resisting and destroying penetrations of limited size.

Seen in this light, the battlefield's architecture would be deeply modified, for in the Resistance Position there could be, side by side, light and heavy formations, in a coherent system of roles, differentiated according to the natural environment and the threat. The light infantry could be employed according to areal criteria, in small groups, following reticular patterns. They should fill the "voids" existing between the spaces "filled" by the mechanized formations at the occurrence of specific threats.

In short we face an evolution which will engage the General Staff for the next decade, in which the light armoured units will have a more and more significant role.

STRUCTURE OF THE ARMY

Operational Component

The operational component continues to be hinged on 27 Brigades, plus the Missile Brigade; 24 brigades exist already in peacetime and 3 are to be completed in case of emergency.

Their characteristics meet the following requirements:

- **Mechanized brigades**, for the conduct of a reactive defence against a prevaillingly armoured enemy. These units, therefore, are not very different from the present ones, but notably stronger in the sector of

antitank and antiaircraft weapons;

- **Armoured brigades**, particularly mobile and powerful, capable of carrying out dynamic and resolute actions; they are equipped with high-technology means, on the same level of the equivalent equipment of all modern armies;

- **Alpine Brigades** which, owing to their specific training and "mentality" — besides the weapons with which they are armed — are particularly suitable for operations in the mountain sector of the eastern border. With a stronger antiaircraft self-defence component and better special vehicles for mobility, also on snow, they represent a completely satisfactory solution;

- **Light Armoured Brigades**, can intervene in the rear areas and on the whole national territory, against airborne units and forces landed from the sea or penetrated in depth. These brigades, obtained through the transformation of those now assigned to the 4th mission, will be equipped with armoured wheeled vehicles for troop transport or armed with guns of considerable power.

Special units

A new Rapid Intervention Force (FIR) has been established for employment in distant zones, in peripheral areas or on the islands, whenever the movement on land does not appear expedient. It is centred on the "Folgore" Paratroop Brigade, the "Friuli" Brigade and the Navy's "San Marco" Battalion. It employs aircraft from the Army ("CH-47" helicopters) and the Air Force (transport airplanes of the 46th Air Brigade); the Navy supplies the "San Giorgio" and "San Marco" ships, soon to be replaced.

For civil defence, a sector in which the Army — with a great sense of responsibility — was the first to act, FOPI (Forza di Pronto Intervento) has been constituted: an operating reality in the service of the



"Otomatic" A/A self-propelled 76mm gun.

country, which could well be considered very effective, within the 5th interservice mission, if its equipment were further improved.

Moreover, we should reorganize:

- the command and control structures of the Army Corps, having ample recourse to the emerging technologies (CATRIN and SIACCON systems);
- the Army Corps tactical supports, envisaging the acquisition of a saturation-fire component, based on "MLRS" and "Firos";
- an antitank fire component integrated with self-defence and helicopter ("A 129") fire;

- a low- and very low-altitude antiaircraft fire component ("Skyguard-Aspide" Systems and 40mm guns);
- the artillery units of the Brigades having a marked autonomy of employment, equipping them with a saturation-fire ("Firos") component and with adequate antiaircraft self-defence capability ("Stinger Mistral" systems and 25mm self-propelled guns);

Territorial Logistic Component

As I mentioned before, the operational forces could neither

live nor operate without what I called the supporting "background", constituted by the territorial component. Also this component has been subjected to a careful scrutiny which has brought to light the obsolete aspects that need an in - depth renovation, in order to adapt it to the requirements of a modern army. One of leading ideas of the study has been that of improving the services for personnel.

Within this framework, the entire structure of the medical support has been reconsidered. In particular, 4 Military General Hospitals have been set up and given the capability to operate over a wide range of pathologies, opening them also to the civilian employees of the Ministry of Defence and their dependents, while the remaining Military Hospitals are only qualified to intervene in the range of the diseases most common among conscripts.

Furthermore the conscription-recruitment area has been completely restructured by introducing new technologies, by a wide employment of informatics and by reducing its size. Specifically, it has been possible to concentrate the main activities in the Regional Recruiting Centres, leaving to the Provincial Centres information and certification functions. In this context, particular attention has also been given to the psycho-physical examination of the conscripts, in order to better the qualitative level of the personnel. Therefore, within the recruiting boards and the recruit training battalions the diagnostic equipment is being improved, together with the teams of physicians, which must always include a psychologist. The conscription-recruitment area, with its new configuration, will ensure a more accurate service to the entire population, improving also the services of public utility, information and certification.

In the maintenance sector, the cornerstone of the logistics immediately connected with the operational units, the Army is starting a reorganization based on the principle of integration of activities and supported by up-to-date management techniques. The final goal is to establish multiple-service centres conveniently located on the territory.

The supplying activity will be more punctual, obtaining at the same time a maximum economy in terms of personnel and stocks.

The repair activity will be considered also in its organization, taking into account that one of the characteristics of the layout of modern weapon systems is always their modularity. This ensures simplicity to the logistics of contact in the Combat Zone, limiting it to controls and easy replacement of modules, conveying the actual repair activity to the territorial logistic support bodies. This activity, carried out by military repair shops of the 3rd and 4th level, is complemented by the industries, which are required to provide their help. Therefore, in the future, as a rule, the actual "repairs" will be carried out only at territorial level, while the operational units will take care of the replacements of whole modules.

Training Component

Finally I wish to mention the training component, which has also undergone important innovations. At present it relies on 28 schools which are entrusted with the instruction of Cadres, volunteers and specialized conscripts. Apart from the possible revisions that may occur in some structures, especially in terms of functional unification of similar schools, it is important to underline the new methods that will be introduced soon. I refer to a wide employment of audiovisual devices, simulators, adequately incentivated self-teaching

techniques, the introduction of computers — with teaching and verification functions — and the acquisition of war games with varying degrees of difficulty.

Also within the training component there is an intense activity of study and research which is going to place the Army in the forefront of the teaching and training sectors.

Personnel

I believe that in my synthetic "flashes" on the subjects described above it is possible to perceive the dimension of the Army in today's reality and in the very near future. Our Army is an extremely complex system in which structures, tasks, procedures, human and financial resources must complement each other in keeping a balance, which I have defined "dynamic" to emphasize the need for a continuous adjustment to the various challenges that a modern Service must face.

This entails the assessment and the consequent planning of the human resources, together with the evaluation and planning of the technical-financial elements.

The non-availability of adequate resources, both human and — even more — financial, certainly harms the process of renovation but penalizes even more the technological development of the country, diminishing its industrial competitiveness in the international contest.

An organization engaged in such a deep process of renewal — particularly from the cultural standpoint — obviously entrusts all possibilities of success to its personnel, which is certainly the most precious among the resources employed. In fact, all would be of no avail — the most advanced doctrines, the reorganization of structures according to models of better efficiency, the introduction of sophisticated weapon systems — if the personnel were unable to utilize in the best possible

way all that is placed at their disposal. Therefore I wish to state here that all the innovative elements listed above are nothing but subsidiaries of man, whose centrality within the Service is felt more than ever.

We receive from the families these young people who in a few months' time must learn the techniques of combat, at individual level and within the tactical formations to which they belong. In this environment they train as operators of complex systems (tank drivers, gunners, operators of telecommunication systems, etc.) or as commanders of minor units.

On the average, in the 12 months of military service, the conscripts acquire an operational level which can be defined as sufficient. The young are open to learning, receptive and, this may seem odd, they have also a good disposition towards the reality of military life, which in most cases they see as a necessary moment in the life of a citizen, which must be lived with attention and commitment so as to dispel the prejudicial aversion felt before the enlistment. But in only 12 months it is impossible to reach the desired levels of training, also owing to the well-known limitations which further reduce the available time. I refer especially to the lack of training areas and shooting ranges. Hence the necessity, mentioned before, to reconsider the training methods, to obviate such limitations as much as possible.

In addition to these measures, aimed at raising the training level of the conscripts, it was necessary to ask the legislators to increase the number of volunteers. As a matter of fact, it would have been impossible to plan the introduction of so many new weapons and modern systems, as well as the massive employment of automated procedures, without a substantial component of volunteers, ensuring, at enlisted-man level, the necessary professional skills



M 109 L self-propelled gun.

and a minimum of continuity.

Parliament has acknowledged this necessity and has responded by constituting a category of extended-service volunteers (VFP). They will certainly solve some of the Army's problems even if they won't be a panacea.

The Army is nevertheless getting ready to receive the first contingent and to handle this new phenomenon which, if it attains the desired dimension, will probably have a socially determinant impact.

But the backbone of the Army are the Cadres: the noncommissioned Officers, who take the brunt of the technological modernization and play a leading role, both in the field of employment of the new systems and in that of logistic support. They are operators but also, at the same time, specialized technicians, managers and instructors. Within the organizational dynamics of the Army, they are confirmed in their role as

technicians with, moreover, wider and deeper professional valences in comparison with the past.

Finally the Officers, who have the immediate responsibility of managing this process of renovation which, as regards depth, dimensions and modes, I believe has no equals in our country.

The Officers are requested to make a considerable effort, for most of them are engaged in an activity outside well tested schemes, according to patterns of behaviour directed toward "results", without references or information derived from experience. Today the Officers must assume the role of managers who, availing themselves of the professional capability of the technicians, control the evolutionary dynamics, managing it in the most appropriate way, according to the objectives set at the various levels.

Nobody can evade this eminently managerial function. The dualism discussed some

years ago about the figures of "commander" and "manager" appear to be out of date. Every Commander, being called to operate in a climate of changes, must have an outlook clearly tending towards the future and cannot limit himself to managing the present.

In order to succeed in this new role, an officer must find a strong motivation, which will spur him to assume a propounding attitude vis-à-vis the new reality. The organization must be in a position to back him in this research, by stimulating also his sentiments of identification with the Army, through the acknowledgement of its improved efficiency, of a greater credibility and, above all, a regained consensus. I have insisted on the aspects regarding personnel within the organizational framework of the Army because, convinced as I am of its preeminent role, I did not want to give the impression, here, of an Army in eager pursuit of technology, oblivious of its human dimension. The Army is conscious that — tomorrow like yesterday — man, with his professionalism, capability to act, firmness of purposes and willingness to fulfill them, will always be the decisive element.

THE IMAGE OF THE ARMY

In the section regarding the structure of the Army I have pointed out the importance of consensus as motivating factor for the Cadres. Consensus and motivation are in a close relationship of reciprocity, so much so that their interactions develop positive or negative spiral processes. An organization that obtains consensus will more easily satisfy the needs of identification of the individual with the organization itself, since he sees it as projection of himself, with the same

projects and goals.

The consensus enjoyed by the organization has a positive spin-off on the men, in terms of prestige and acknowledgement. This, according to the theories expounded by Maslow, satisfies the individual's needs of belonging and being esteemed, and leads to the pursuit of "self-realization", which is placed by Maslow at the summit of the hierarchical scale of motivations.

If this sentiment is born, a man takes part to the best of his abilities in the organizational choices, makes them his own, identifies himself with them and has towards them a propounding attitude, the only capable of ensuring success to an organization that considers man its centre.

Pursuit of consensus is, therefore, the necessary condition to obtain that the programmes of development of the Army be carried out, on the qualitative plane, in the regained efficiency of the structures, without letting ourselves be confined within the merely quantitative dimension of an increase and an improvement of armaments. The best method to obtain consensus is that of managing one's own image in a suitable way.

Up to now, the Army has been absent from this arena, where whoever has relations with the public is called to compete.

The results of this absence are known to all and sundry. The image of the Army, lacking the glamorous figure of the jet pilot or the romantic one of the "sea wolf", is not perceived for what it really is. One notices mostly its drab khaki uniform, without noticing the values hidden in it. The image of the Army is entrusted to often scarcely informed reports, or to boys who help perpetuate obsolete stereotypes. I want to emphasize that these are the same young men who within the organization have a positive attitude but, once they are out, for psychological mechanisms

hard to understand, do not always express a fair judgement of the world in which they have lived for a year, perhaps afraid of going "against the stream". It is time to reverse this image, which, besides being formed, as I have said, by inexistent stereotypes, consists also of commonplaces far removed from reality, and of representations of extreme conditions as normality.

The Army is working in this direction, with the purpose of making the collectivity aware of its efforts towards renovation, its progress, its difficulties and successes. It tries to open a sincere and productive dialogue with society, in order to lay the right stress on the positive daily contribution that it offers to our nation in the most different fields.

It is impossible to reverse the present situation in a short time. The action taken in this direction will therefore have a medium- and long-term development, tending to propose a new image and to secure and preserve it.

We shall have to keep in mind in every manifestation that this image will be accepted only if the citizens are able to verify its accuracy. We shall have to seize every occasion to prove our efficiency, convinced that this is the best way of advertising a modern Army.

"Operation image" is therefore based on the substance of the big and small manifestations, first of all the ones in which the Army comes into contact with the public during the performance of its institutional duties.

The trends outlined, devoid of rethoric and strictly pragmatic, will have to make the Italian society realize the renewed function of the Army, which is destined to assume a growing weight in the preservation of balances in the current international reality, prefiguring a denuclearized Europe.

This regained function repropose a twofold image for the future Army:

- the first and fundamental one, as a "Producer of Security" which absorbs labour forces;
- the second, as training institute that gives skilled manpower to the nation.

But this is not all. The Army, its Cadres, must resist exploitations which are by nature always one-sided. The Army is also history, the history of the country, in its past and in the approach to a better future. A future towards which the Army is looking in order to renovate its operational role, striving to give prominence to the conventional forces and thus be a fundamental tool in the defence of Italy and Europe, in a strategic environment which is also evolving. The Army is the custodian of eternal principles of conduct and is proud to safeguard them for the good of our Country.

Antonio Viesti



Lieutenant General Antonio Viesti has attended the Military Academy, the Application School, the General Staff and Advanced General Staff Courses, and the Joint General Staffs Institute. He has been Commander of the 10th Battalion, 132nd Tank Regiment, Deputy Commander, "Manin" Armoured Brigade, and Commander, "Granatieri di Sardegna" Mechanized Brigade. Lt. Gen. Viesti has served as General Staff Officer at the Headquarters, "Cremona" Infantry Division, the Defence General Staff and the Headquarters 5th Corps. He has held the following positions at the Army General Staff: Staff Officer at the General Staff Secretariat of the Deputy Chief of Staff; Chief, 1st Section, Planning and Budget Branch; Chief, General Staff Secretariat of the Deputy Chief of Staff; Chief of the Procurement Plans Branch, Deputy Chief of the 4th Division, and Deputy Inspector for Logistics. Lt. Gen. Viesti has been Chief of the 4th Division of the Army General Staff and Inspector for Logistics; at present he holds the office of Deputy Chief of Staff of the Army.



THE GERMAN ARMY

Interview with the Chief of Staff
Lieutenant General Hans-Henning Von Sandrart

After three years as Army Chief of Staff, General Von Sandrart has been appointed Commander-in-Chief of the Allied Forces in Central Europe; before he moved from his national appointment to his new NATO task, we asked him a number of questions about the German Army situation and the Central front defence, seen by the man responsible for the German land forces.



The Geneva talks on nuclear armaments in Europe should change considerably the European scenario; would an eventual success of these talks have an influence on the German Army structure and size?

I believe there is no doubt that to keep the balance between nuclear and conventional armament is an old problem for NATO, and that the conventional capability has always been one of its weakest points. Against the background of the near developments in the nuclear armament area, this problem becomes even more pressing, which means that the linkage between nuclear and conventional capabilities, in my eyes, remains one of the deterrent pillars, but the conventional pillar gains in importance. And this is not a particular German problem, this is a problem of the Alliance and especially of its European part as a whole. Then we are definitely not going to increase the strength of our conventional Armed Forces, neither in peacetime nor in the wartime posture. But we are trying, in the limits of the financial framework, to make more out of our money and to use all of our modern technology, and this is a problem which has to be faced by all NATO nations. On this background, you have to see the German-French efforts to improve the military links, as with all other allies, and we will put all our efforts to maintain our forward defence capability.

How are you going to solve the emerging problem of the decrease in manpower? Is there any plan for the enlistment of women in the German Army?

The decrease in manpower is our major structural problem for the nineties. The aim is to keep the peacetime Army level as high as possible. For that reason our government has taken the decision to increase the time of military service from



A Kraka TOW of a paratroop battalion; the German paratroop units will modify their philosophy of employment as soon as the new antitank helicopter enters service.

15 to 18 months, which was not an easy decision but will help us very much to reach our target. There are other legal decisions, like that of reducing the number of exemptions. But definitely the number of conscripts will go down, no matter what, and for that reason we try to make more use of our reservist potential: that means that our already relatively high reliance on reservists (about two thirds of our wartime strength are mobilization units) will increase. In consequence, we have to find the way, especially for the front line units, which, without bringing the reaction capability of our forces into danger, would allow us to fill into those field units mobilization components which can be called up very quickly, with a high training level. We will increase the days of reservists training per year, that roughly means that in the nineties we will have between 300.000 and 350.000 reservists per year, going through training exercises for about two weeks. This is really a challenge for the active part of the Army and for the

reserve component too and makes the regulars an important sector, because we do need them as cadres, we do need them for high technology equipment, we do need them as training personnel for reservists, and therefore there will be several legal measures to maintain the necessary level of regular soldiers. About the women problem, this is at the moment more a political than a military issue; it is bound to a number of legal questions because our constitution does not allow the service of women in combat and with arms. So our planning does not include women in the Army, and we wait for what the politicians will decide in the framework of the legal situation within our constitution.

Can you highlight the importance of the Territorial Army in wartime, its tasks and the major changes which will take place in its units?

The German Territorial Army has many tasks and represents the national part of our defence, not only in second line and support units; it also has to provide freedom of operation and rear area security not only for our Corps but also for all NATO forces in Germany. At the moment in the present structure only 10% of the wartime strength of the Territorial Army are active soldiers. In the future structure we will try to increase the present amount, despite our manpower shortages, at least in those parts of the Territorial Army which will have an early commitment and must be able to react quickly for traffic control and security of the rear area against all kinds of enemy special operations. We try to strengthen their cadres; for example in the so called Home Defence Regiments, which consist of three light infantry battalions and no real cadres at all, we want to increase their number and reach a 20% active strength in peacetime, by combining the Territorial Training Organization with unit

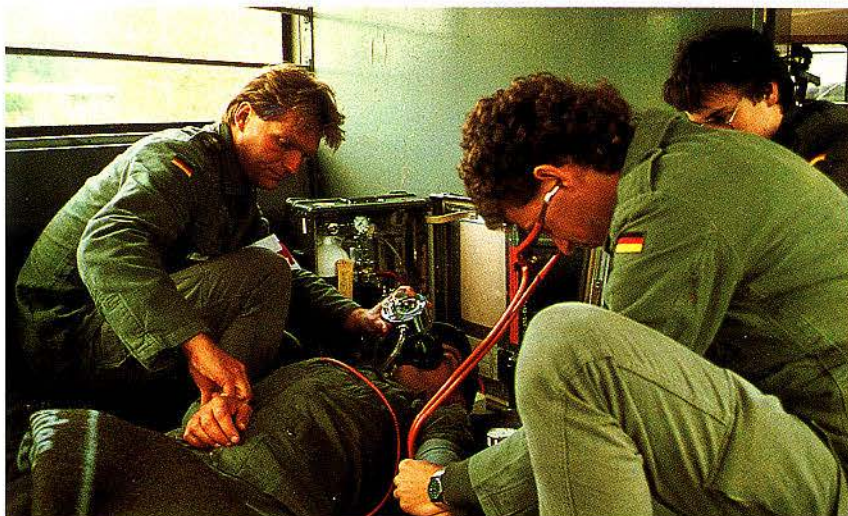
German Territorial Army soldiers of a medical unit assist a wounded man during evacuation. Reserve units are also tasked for the defence of rear areas.

The Gepard anti-aircraft system has been one of the major German programs of the last decade.

cadres, to give them better training, better "esprit de corps" and better reaction capabilities.

The new antitank helicopter PAH-2 and the MLRS artillery system will become operative in the medium-term. How will they be inserted in the German Army structure and will they change the tactics of your Army, which is one of the most armoured in Europe?

In my opinion, both weapon systems and their periphery, although different in character, belong to the area of combat support which will become more and more important; especially in mobile firepower, which can be switched quickly from one place to another and has not only the capability to hit the enemy in front of the fighting soldiers but to reach the depth of the enemy to cope with its reserves marching to the battlefield. Therefore the helicopter which hopefully will come, and the decision has just been taken on the political side, will allow us to fight in a modern environment against tank concentrations by day and night, and the night is most important. From my point of view it comes late; that is why we still try in the meantime to improve the combat capabilities of the light antitank helicopter, and especially its night capabilities. The new aircraft will be deployed at Division or Brigade level; it is part of our structural decisions at the moment. We hope that we will be able to equip this modern antitank helicopter with modern fire-and-forget missile capability and with self-defence capabilities. This new system will be integrated in a new Division or Brigade size unit at



Corps level, together with our airborne troops and with our transport helicopters; these three elements will form together a kind of antitank capable operational reserve at Corps level. But, due to the lack of resources, we must find the way to use these three elements both together and separately. Our intention is to issue the light helicopters, improved if possible, to the Divisions, after the new ones will have entered service. In this way, the Divisions will get their own independent antitank capabilities.

The MLRS is something different, it is an artillery system, hopefully with a potential growth. It is a long

range project which started with the fielding of the launcher and goes over the years with the development and improvement of the ammunitions which shall give, the commander mainly at Division level, the possibility to hit especially the enemy artillery. Therefore we must see it as a system, together with the related part of the acquisition command and control system, like drones and modern anti-artillery radars, which have the capability to engage in-depth targets and especially, as I said, the enemy artillery. Therefore I believe that this is really one of the future armament programs which leads us in the right direction, which



German soldiers in action; the main problem is the decrease of young men liable for military service. This has led to an extension of the service from 15 to 18 months.

remarkably increases our firepower and gives us an in-depth flexibility.

I would not say that these weapon systems will have direct influence on our armoured warfare concepts. The tank is less and less a means which can operate alone. So what we in Germany have called for years "combined battle" becomes more and more important. But we have to cope with an enemy who will try to maintain his heavy armoured capability; especially on the background of the increasing importance of conventional warfare, in case of attack he will have to punch quickly through our defenses to gain depth quickly and to conquer strategic objectives. Since our forces have never been numerous enough to face this enemy, we have to be mobile, we must have the massive capability to react operationally to his main effort, and to put our operational concept against his; here it is where we do need troops and forces capable of waging a mobile warfare. And since the modern battlefield will be characterized by heavy fire, by artillery, and by the threat from above, we

have to protect our soldiers on the move; so the three elements, protection on the battlefield, mobility combined with firepower, will maintain their importance in the future. And if you consider them together, they are more or less the characteristics of a tank, which is not necessarily an offensive system, it can be used it also for defence, and it is what somebody calls a "mobile bunker". But technology may change the battlefield, and the tank of the year 2000, which is roughly the time-frame where we think to introduce a successor of the Leopard-2, may offer completely different solutions and a completely different look.

The C³I systems are among the most important materials which are entering service in the modern armies; what is taking place in Germany and how are you coping with the problem of interoperability with the other Allied forces?

Reconnaissance, real time transmission of data and capability of delivering ammunitions effective against all types of targets are key elements of the battlefield of the future. The German Army has many projects to improve target acquisition potential and

modern reconnaissance means through the procurement of new systems. On the reconnaissance side we have drones, we will field the drone CL-289 at the end of the eighties, we think about a drone for shorter ranges with real time capabilities, we think about modern radars for the location of artillery, and all this has to be linked together and therefore we will field, and we are pretty far advanced, an operational tactical command and control and information system which will be called HEROS and will be linked to an artillery system known as ADLER and to its respective subsystems, and to a command and control system for anti-aircraft defence. This has to be linked with the command and control system of our neighbours and to the ACCS, the air command and control system which is being developed within NATO.

What will be the effect on the German artillery of the abandonment of the SP-70 project?

The replacement of the oldest artillery guns, as M-109s and M-110s, will be delayed. This project has been terminated trilaterally because all nations agreed that the developments were not as successful as they hoped to be, but this decision does not mean that we have "closed the shop". We will work further, the experience gained in this project will be used, and we immediately started to think of a new howitzer. The three nations, as far as I know, agreed that they are still open for cooperation for a successor and more or less agreed on the tactical requirements for the future howitzer. I hope that we will continue; it will come later, but we need a new artillery in the nineties because in all European nations there are many artillery guns that are becoming old.

What is your opinion about the increasing sophistication of tanks?

We must find the right balance between the necessary sophistication and the usability by soldiers. There are technical conquests you cannot refuse, in fire control systems, night firing capabilities, gun stabilization, modern ammunition, maybe in the future, guns for fighting the threat from the air, capabilities to detect the enemy that could hit the tank from above, modern technologies to decrease the risk of being located; we have to get all this in order to be able to go to the battlefield with the probability of succeeding. But we have a requirement for soldiers and technicians: to ask only for the necessary requirements and to look into the logistic problem, the training problem, and at the possibility of having the equipment employed by conscripts, as well as to the need to save money. Moreover, what we have learned from many trials is that even the more sophisticated items can be put out of order by a direct or indirect hit, so all these systems must have an emergency solution allowing to fight in, let us say, a "conventional way", aiming with very simple devices, and the crew must be trained to use them. And the same applies to modern command and control systems. A staff must be capable to handle modern systems, to use their quantity of information, and to exploit their time-saving capabilities; but if the system breaks down, the war and the battle cannot stop, the Staff must take its decisions, and be capable of controlling and directing the battle.

How does the cooperation between the German Army and the air forces works and how important are on your opinion the combined air-land operations?

To a great extent this is a NATO problem because the air force structure, especially in Central Europe, is an integrated structure and a German Corps



when calling for air support does not know whose airplane will come. So the level of combined air-land operations, which are a must and will become more and more a must in the future, in Central Europe is at Army Group level, and we have achieved a lot in this field. For me there is no question: in the future there will be no isolated land warfare especially at operational level, and as long as our special long range air and land assets are scarce, we cannot use them

A vehicle of the Engineer Corps on the move during a snowstorm.

against low priority targets and so the planning of air operations must be closely linked to ground operations under a single operational idea, at least up to 100 km from the FEBA. Moreover, air space control is no more a question of flying assets only, but also a factor of integration of NATO air defence with the more operational and mobile Army short range air defence, and all



The Leopard-2 is the standard tank in service with the armoured units. Its replacement is scheduled for the end of the nineties.

together this creates the problem of air space control which is one of the most complex issues of the future. The third dimension is becoming for land forces more and more important, not only because of the helicopters but also because of drones, artillery, antiaircraft means, and we must find both a technical and an organizational solution to that problem.

Can you describe better the role of your Airborne Division, which is part of the 2nd Corps?

The present structure is a peacetime solution. The picture is therefore a little misleading, since it seems that the Airborne Division belongs to 2nd Corps. That is true, but the three brigades are located one in the South, one in the Center and one in the North of Germany, so the idea is that each brigade belongs to a different Corps. We will keep this structure putting them, as I mentioned before, in a combined Division, which will include the modern antitank helicopters force and the transport helicopter force at Corps level, because the three Corps are fighting at the same time but separately, the 2nd in the South, the 3rd in the Center and the 1st in the North, and we consider the Corps as the

lowest level of operation in combat, which needs a mobile force which allows it to influence the battle in an operational way. This is why we keep the Brigades at Corps level with the option, if necessary, also to employ them at the border of the area of responsibility. We don't keep them at Staff level because we don't have any rapid employment need in our country, and moreover our Staff does not have in wartime any operational responsibility with the Corps, which pass under NATO command, but mainly with the Territorial Army.

"Grid defence" and "framework defence" are well known tactics used by some allied nations to defend their respective sectors; what is your opinion on this kind of battle and is the German Army using different tactics?

Sometimes these words create a difference which is over-emphasized; I believe that especially in the last years there have been very close exchanges of conceptions between the British, the Germans and the Americans, and there are really no differences in the real conduct of operations. We consider forward defence at the tactical level, which means reinforced

battalion, brigade or even division, as what I call a "compartmentalized battle" that means a mobile action in a restricted and given area. But the terrain is never the same, so how to exploit forests, swamps, small rivers, villages, depends very much on the actual situation you are fighting in. So there are areas where you will have to fight open battles, there are others like the Hessian mountains or urbanized areas where you can fight a battle sticking much more to the ground, and you will probably have a battle in northern Germany, based very much on the flexibility and mobility of units of reinforced battalion size, exploiting the terrain and the manoeuvre in depth. We believe that we are going in the same direction, the British are becoming more mechanized than in the past, their infantry gets armoured personnel carriers and combat tracked vehicles, so they are coming closer to our operational concept, while we consider to insert in our armoured and mechanized structure, according to the geographical area of intervention of the division, infantry elements capable of holding their positions with light weapons.

Standardization has always been a dream in NATO; what is your point of view on this subject and what are the fields where a common standard should give the greater advantages?

This is an old NATO subject: there is no doubt that in a coalition Army, especially in Central Europe where we have such a interlinked and integrated defence, interoperability, which is a term I prefer, is a continuous demand. We always are behind this requirement. Interoperability can



be achieved in two ways: either by standardized weapons, which would be probably the most effective way, or at least by realizing it in important elements, i.e. in the logistic field, same ammunition, same calibers, same fuel, same stocks of large consumption materials, as, for example, tank tracks. And what is even more important is the field of command, control and communications, because for example the modern target acquisition systems have wider range than the narrow boundaries of Divisions and Corps, and no Corps can nowadays just look at his limited sector, it must consider threat which may come from the air and from the flanks, it must coordinate its operations, its fire, its electronic warfare, with its neighbours and the air forces, and therefore there must be a quick exchange of data.

Generally I would say that we have achieved something, my Staff is engaged in hundreds of NATO as well as

multilateral or bilateral working groups, either linked to specific equipment or to the development of standards for equipment, or to harmonize concepts and procedures. We have really to distinguish: I believe that in the field of concepts, tactics and procedures we have achieved a lot; there are common procedures, we apply them on every occasion, and it is really impressive to see how the nations work together at tactical level. In the field of major equipment mostly we rely on international cooperation, and about 60 to 70 per cent of our armament projects are in cooperation. And when we don't come to common equipment, we at least develop common parameters and specifications, so that the systems can work together. There are fields where we have improved, there are fields where we have failed: for instance, the infantry weapons are for me a main concern, we now have the old NATO caliber, the American caliber, the British

Wheeled vehicles are employed by reconnaissance and support units.

caliber, and we, in the long run, will also develop a different caliber. Very often different planning, different requirements and national interests lead to these differences, but this does not make the task less important and less necessary. Anyway, I think that command and control is one of the weak points, because almost every nation has developed its own system.

Therefore in this generation it will probably not be possible to standardize these systems; what we can do is to achieve the necessary exchange of data through tactical interfaces. If we didn't succeed in standardizing the hardware, we made great progress in the field of common standards which allow the different hardware to communicate with each other. But let me say that in my opinion standardization and interoperability in the field of command, control and

communications are more crucial than having the same tank.

Germany is at the moment the nation with less constraints on training. How do you see the future and what is the importance of the training facilities used by your Army in Canada and Great Britain?

We are the training area of Europe. We and our Allies have to train the troops on the field, and we have to reduce the burden of manoeuvres in the civilian areas for environmental as well as for economic reasons. In the mean time we will also enhance the importance of simulation to save money also in live

ammunition. We are very glad to have the Canadian facility in Shilo (Manitoba) where we can train a number of Leopard-1 and mechanized infantry battalions, especially in combined actions, with far greater mobility and firing capabilities that we can have here in Germany. We have in Shilo 16 armoured battalions and 8 mechanized infantry battalions every year, for training tours of 3 weeks. We have also a firing range in Great Britain, in Wales, where 12 tank battalions, including Leopard-2 units, train every year for two weeks. The reason for that is not only that we want to "export" our training to other countries, but also that we

must clear some space for our allies, here, on German training areas, because they are not large enough for everybody. And I must say that nowadays the expression "training area" is wrong: they are more or less firing ranges, because from Monday to Friday they are mostly occupied round-the-clock by firing exercises and they are not available for tactical training, which is mainly carried out during week-ends, when we do not fire.

Beside these limitations there is no country in the world where troops can do so much as they can do in Germany; there is no nation in the world where you can have a free play mechanized exercise on civilian terrain. And we are conscious of the fact that this is a severe burden for our population.

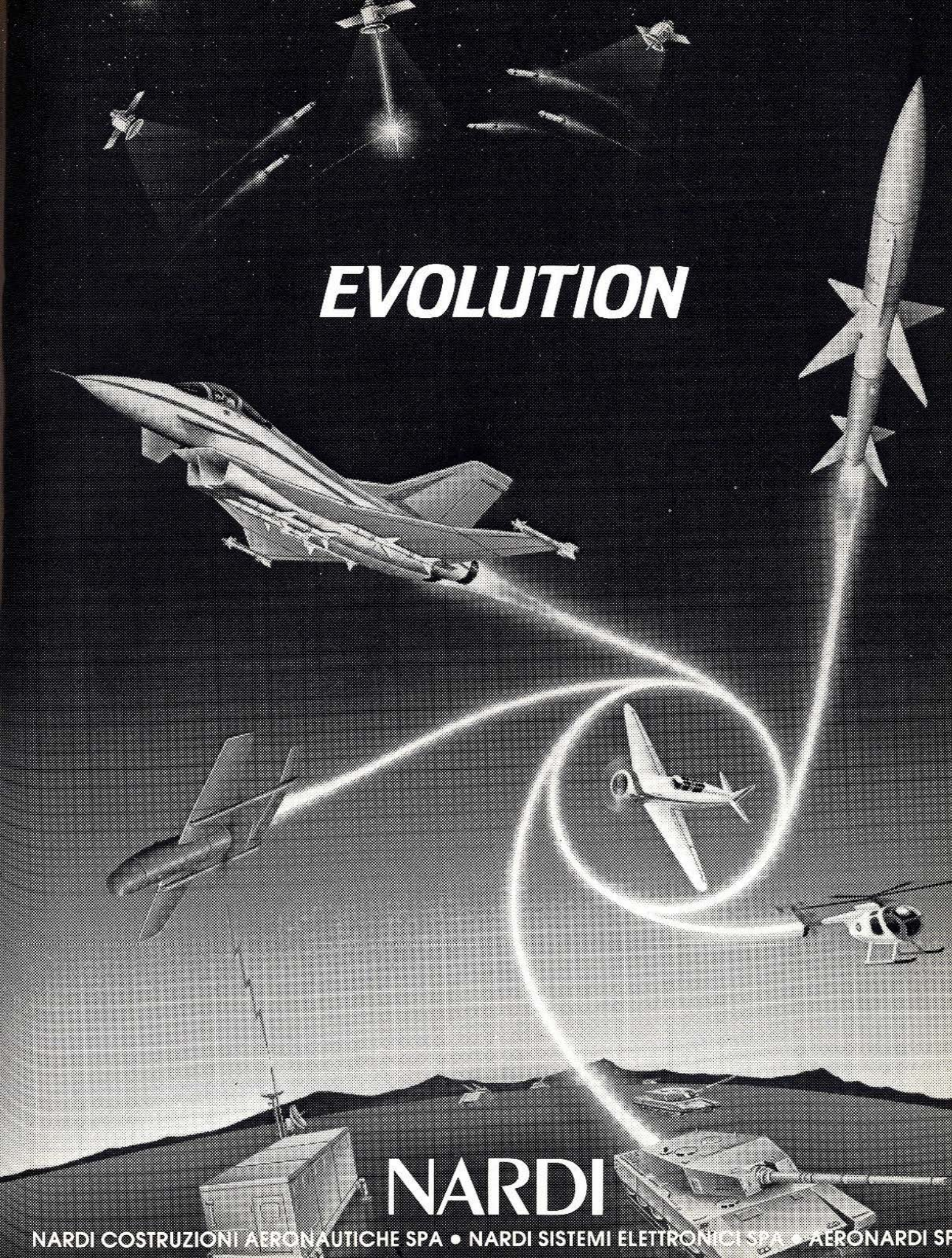


Biography

Gen. Von Sandrart was born in Argentina on 21 July 1933. He joined the Bundeswehr in 1956. Following training he commanded an armoured field artillery battery from 1959 to 1964. He then attended the Federal Armed Forces Command and General Staff College in Hamburg. In 1967, after having been promoted to Major, he completed a course at the Staff College in Camberley (United Kingdom).

After an assignment as operations officer in an armoured brigade from 1967 to 1969, he served as a member of the Army Study Group of the Federal Armed Forces Command and General Staff College. He commanded the 25th Armoured Field Artillery Battalion from 1971 to 1973. Promoted to Colonel he served a two-year tour of duty at SHAPE as staff officer in the Nuclear Policy Section.

He was Chief, Military Policy Branch, MOD Bonn from 1975 to 1977. After promotion to Brigadier General, he served as Chief, Military Policy Division of the FRG Delegation to NATO from 1977 to 1980. After promotion to Major General, Gen. Von Sandrart commanded the 11th Panzergrenadierdivision from October 1980 to April 1983 when he became Deputy Chief of Staff for Operations at SHAPE. Gen. Von Sandrart became Chief of Staff of the German Army on 1 October 1984.



EVOLUTION

NARDI

NARDI COSTRUZIONI AERONAUTICHE SPA • NARDI SISTEMI ELETTRONICI SPA • AERONARDI SPA

THE AERONAUTICAL INDUSTRY

ITS ROLE IN THE NEW SCENARIO
OF INTERNATIONAL CO-OPERATION



TECHNOLOGICAL INNOVATIONS AND RESEARCH

The rôle of our country's aeronautical industry in international competition — as it was, on the other hand, the case for nearly all the other sectors of productive activities — was gradually and deeply influenced by the technological change, that has proved to be a powerful factor of growth of the economies of the industrially advanced countries. It gave birth to new methods and new techniques, which have reduced costs and increased productivity, thus allowing an expansion of productive activities and an ensuing supply of goods never known before in the history of mankind.

It is on technological innovation that, after all, the ability of Europe and hence of our industry of coping with the world challenge that opposes the United States to Japan, is presently measured.

To give just an idea of the "pulling" function of this factor and of its very great influence on economy, suffice it to consider that, according to the results emerged from researches carried out by specialized institutes, 44% of the productivity increase in the United States is traced back to technological innovation, while at least 2/5 of the increase in the gross product recorded in the last two decades in the US are ascribed to it.

A more thorough examination of this aspect — that cannot be done, in view of the short span of this paper — necessarily shifts the approach to the field of research (since innovation means research), to the difficulties encountered by this basic sector, that, taken as a whole, has not sufficient means available, and that cannot rely on the resources of the public and private enterprise alone.

Left.
"A 109" helicopter.
The main tasks of the A 129
"Mangusta" are antitank warfare
and armed reconnaissance.

It is, however, to be pointed out that the state intervention in the cooperation with the enterprises has been increasing all the time, through the growing recourse, for example, to the university laboratories — nearly all public ones — which are assigned research themes, whose "spin-offs" ultimately turn to the advantage of the system as a whole.

This is a picture that is on the whole inadequate, and that is liable to push Europe, and our country with it, towards a chronic technological delay, and to confine the European industries to a subordinate role vis-à-vis the American and Japanese competing companies.

The extent of the European "delay" in this sector can be summed up in a few figures: the United States appropriates for research a little less than 3% of the gross national product, for an amount that is expected to be in 1987 as high as 63 billion dollars, whilst for the other EEC member countries the incidence is, on the average, of about 2%, with considerable variations from country to country and minimum peaks that, as in the case of Italy, are hardly higher than 1%, or about 8.000 billion lire, which include both public financing and self-financing of enterprises.

The situation of severe inadequacy resulting therefrom for our country, at a time when the necessary basic corrections are being studied by the competent authorities, further increases the importance of the irreplaceable function that our public structures, and the Universities in the first place, are called upon to perform, in order to make the young people ready for the major changes that have taken place in the production activity, and that, even now, give a broad outline of the post-industrial society of the next millennium.

It is essential, if we want this to take place, that we help creating a "culture" of innovation, in the most comprehensive meaning of the word, of ideas, behaviours and

attitudes that concern not only those who work within the enterprises, but that also involve the social tissue in which the enterprises are present.

There exist, in Lombardy, the conditions that facilitate the full insertion of the new scenario determined by the technological revolution, chiefly thanks to a well-tested aeronautical tradition.

In the small area north of Milan, between the town of Varese and the river Ticino, did in fact originate, early in this century, the first aeronautical industries, such as Macchi, Siai Marchetti, Caproni and Agusta itself, whose plants are still located in that area.

This permanent link between industry and territory has thus somewhat facilitated the finding of skilled manpower, labourers, technicians and engineers, even if today, as we shall see later on, the search for personnel to be employed in our plants has become more critical, especially owing to the introduction of new technologies that have broken off from tradition, and have caused new professional figures — whose supply is, in general, not yet qualitatively and quantitatively in line with the industry's requirements — to emerge.

Aerospace, and the aeronautical industry for the close links of interdependence it has with the former, unquestionably is the drawing and strategical-interest sector, that has been capable of giving a decisive impetus to the technological, productive and commercial cooperation among the European and non-European countries.

To confirm the weight and the importance that the Italian aerospace industry has acquired in the country's economy, it will be sufficient to mention that the total number of the personnel employed, slightly increased in recent years, as grown from 42,700 units in 1984 to 43,300 in 1985, of whom 33% in the South.

Those in charge of research and development are 16.3%. Technological innovation has influenced the distribution of the professional rôles: from 1981 to 1985, the weight of the labour force dropped by 7%, against an increase of over 17% in the number of clerks and managers.

Sales increased from 3,900 billion lire in 1984 to 4,500 billion lire in 1985, with a growth of 15% in current values, and of 5.5% in real terms.

Exports in 1985 amounted to 53.3% of the sale revenue, for a total of 2,400 billion lire, against a volume of imports equal to 740 billion lire, with an export/import ratio of 3.2.

A comparison between these data and the other European economic realities, shows that our country can still do a lot to increase its activities in this sector.

Italy, in fact, has represented, in 1984, 8.6% of the entire turnover of the EEC aerospace sector, against 17.5% for Germany, 36.4% for France, and 34.8% for Great Britain.

THE AERONAUTICAL MARKET AND THE INTERNATIONAL ROLE OF THE AGUSTA GROUP

Agusta, one of the leading groups in the world aeronautical field, that conveys 4/5 of its production to foreign markets, has made research the pivotal issue in the formulation of its strategy; this has allowed its companies, in the present international slump period, to stay at the highest level of world output production, thanks to high sophistication of the most advanced part of its realizations.

In 1986, the Group, for all its companies, has appropriated about 300 billion lire, or 25% of the sales revenue, for research; this is a sizable effort, of a determining importance for creating the conditions for entering highly prestigious international programs on an equal footing, if not in a

leadership position vis-à-vis the international partners.

The firm pursuit of this strategic line of technical advance, in the framework of the whole action performed, has also substantially helped in attaining, late last year, and in advance of the scheduled time, the priority objective of restoring the economic balance of the most part of the enterprises, and in achieving a consolidated result of a no-profit and no-loss balance of the Group.

The industrial policy choices that have allowed such a recovery to take place are, in addition to the strengthening of research and technological innovation, essentially the following: the development of advanced programs with international partners, the diversification of the commercial policy, directed at finding new outlets in highly interesting geographical areas, although acting with a view to reinforcing the Group's presence on the traditional markets.

The implementation of these basic choices would have however proved impossible without the radical organizational and functional reorganization made in 1983 and 1984 by the new management. Through it, a stricter industrial coordination and a rationalization of production was implemented, by entrusting some essential guiding and control functions to the leader-company of the group.

The present structure has facilitated the pursuit of synergy objectives at group level, through the definition of industrial and marketing strategies consistent with the development of what Americans — who are masters in this field — call Corporate Business. Also increased is the power of entering the world markets through a coordinated and integrated presence of all productive sectors: helicopters, aircraft and aerospace systems.

Prior to cursorily reviewing the most significant programs that have allowed to further

improving the prestige Agusta presently enjoys on the world markets, it might be perhaps convenient to briefly analyze the features that make international cooperations a set course for all enterprises.

The necessity of working on the international market springs, in the first place, out of the need of spreading the high development and industrialization costs on cumulative sales volumes higher than those obtainable on the limited home market and on the traditional foreign market of the enterprises.

It should be considered, in this regard, that the aeronautical industry is a long-cycle activity, for no less than 6-8 years elapse from the start of the project of an airplane or helicopter. It is on this basis that the programs and relevant investments should be evaluated.

In addition to that, the participation in international programs allows to keep in touch with the most advanced technological innovations, through the exchange and the integration of the technical and scientific knowledge required for meeting a demand that, in the military sector, will call for means capable of performing more and more sophisticated missions and, in the civil sector, will impose more and more advanced solutions in terms of operating costs, comfort and respect for the environment.

As is obvious, the massive presence on the international market, that for Agusta, as we previously hinted, is equal to about 80% of the total output, involves risks that must not be underestimated. Over and above the big fall of the dollar, that has heavily penalized sales — the contracts with foreign firms almost always envisage payment in this currency — everyone knows the factors of instability that loom ahead in the political field, almost everywhere in the world.

It is in a situation like this, presenting complications in



The AB 412 "Griffon" is capable of performing tactical support missions, operational liaisons, fire cover, as well as transport of logistic and combat equipment. It can be profitably used in medical evacuations, patrols and search operations.

various peripheral areas, that the search for new markets must be expanded to the utmost.

Moreover, new countries are appearing on the market, with a view to developing their industries in the aeronautical field, and this makes it necessary that the traditional lines based on the mere sale of the product be accompanied by a strategy of international co-operation, basically aimed at the export of know-how, leaving the poorer work to the industrially less advanced countries.

INTERNATIONAL COOPERATIONS

One of the most qualified points of the strategies adopted

by Agusta, is unquestionably the strong characterization, in the international sense, of its activity. A decisive impetus towards this process has come from the new programs, both under way or just launched, through which an attempt was made to pave the way for the cooperation of all those countries — and there are many of them — that may be interested in developing them with us.

Among those now in an advanced stage, the A 129 "Mangusta" helicopter, a highly prestigious realization, born for meeting the requirements of national Defence, for which, just in view of its very high characteristics, proposals are being examined for producing the aircraft in cooperation with European firms; the "EH 101", of which the static tests of the dynamic units started recently; "the NH 90", a NATO helicopter of the nineties; just recently started, the "Tonal", the multipurpose helicopter derived from the "A 129", whose

program began with the signature of the agreement, that took place last September at Farnborough, stipulated by the representatives of the companies of the participating countries, namely, Agusta, Westland for Great Britain, Fokker for Holland, and Casa for Spain.

It is the first time, in the events of the Italian aeronautics of the postwar period, that, starting from an entirely Italian product, a project (the "Tonal") is developed, that is based on the advanced technologies and systems we have studied and realized for the "A 129", and that casts them forward into the next millennium. The Tonal project will benefit — and this is what will have to be defined in the feasibility study to be carried out by Joint European Helicopter, the company with headquarters in Rome and already operative — of everything both science and technique, as well as our further research, may make available, with regard to the

structure of the machine and its propulsion, navigation and control components, and also with regard to the weapon systems (third-generation missiles).

Derived from the A 129 "Mangusta", the only anti-tank helicopter in Europe, that has allowed us to be many years ahead of the similar Franco-German program ("PAH 2"), still in the study phase, a utility version and another for Battle Field Support are scheduled to be produced, according to a "family" notion, of which more later on, that is being adopted to an ever increasing extent. Also in the case of the "EH 101" helicopter, developed jointly with the British Westland, besides the basic configuration destined for the British and the Italian Navy, other civil and military versions are foreseen that, through the use of the same complex structures, such as the dynamic units previously studied and realized for the base version, will allow to meet different requirements, thus expanding the market opportunities. The "EH 101" program is now approaching the flight tests, which are scheduled to take place next spring.

Still to be mentioned is the "NH 90" program, the NATO helicopter of the nineties, of which we have the leadership for the naval version, and in which the four European helicopter-manufacturing companies participate (besides Agusta, the French Aerospace Company, the German MBB and the British Westland) together with Holland. This is a major opportunity that represents a concrete hypothesis of European integration on the industrial plane in this sector. The companies taking part in it have the skill and the experience required for carrying it out autonomously.

On the other hand, at least as far as we are concerned, the cooperation in other programs with the United States will not be discontinued, for they stil



represent a constant reference point, as well as a source of scientific and technical advance that is almost inexhaustible.

Lastly, of special interest for the developments it may have, the Eurofar (European Future Advanced Rotorcraft) for the development of a convertiplane, planned as a part of the larger Eureka program, in which the principal European aeronautical companies take part. This is a newly conceived machine, already amply tested in the United States, that combines the advantages of the helicopter with those of the airplane, and that can expand the scope of helicopter utilization in the civilian as well as in the military field.

Other cooperations are under way and they can be expected also in the sector of the trainers and of light cargo

The "NH 90" program envisages the development of a common basic helicopter, in the order of 8.5 tons, from which a version for tactical transport (TTH) will derive, to be developed by Aerospatiale. Another anti-submarine and naval version (NHF), will be developed by Agusta.

The new helicopter will be realized, under a joint program, by the aeronautical industries of five European countries: Italy, France, United Kingdom, Germany and Holland.

planes, in which the Agusta group works with the airplane division companies, Siai Marchetti, Caproni and IAM of Brindisi.

This production sector feels the effects of the difficulties proper of this specific market segment, where demand dropped to very low levels in recent years and, contrary to what has taken place in the helicopter sector, shows no substantial signs of recovery.



The medium/heavy "EH 101" transport helicopter is an Agusta/Westland joint project that has been brought into life in order to meet the requirements set forth by the Italian Navy and the Royal Navy, to replace the SH 3D "Sea King" naval helicopters. The "EH 101", whose project envisages a civil version and a mixed-transport version, characterized by the adoption of a rear loading ramp, is driven by three turbines supplying 1600 SHP each.

Agusta is present with the SF 600 "Canguro" of Siai, for which the required certification is nearly completed, with the "C 22J", a light two-jet plane by Caproni, and with the "S 211", a two-jet training plane.

This machine, which has been operative for some years in some air forces of foreign countries, has obtained a significant success and has been already adopted to the users' full satisfaction. A new

version, to be manufactured in cooperation with the industry of the State of Singapore, is the object of a feasibility study.

And finally, a few words concerning the activities of the aerospace systems division of the group, that includes the following companies: OMI of Rome, FOMB of Benevento, and the newly born Agusta Sistemi of Tradate, in the province of Varese. It has actively entered the complex reality of a world market that is greatly expanding according to trends that undergo rapid changes and that are, therefore, not easy to identify. The fields of activity have been widened to cover not only the OMI's traditional ones (optics, fine mechanics, photogrammetry), but also a number of advanced sectors (on-board computers, robotics,

artificial intelligence, missilery, space).

The aerospace systems division has assumed a very important position within the Cites Consortium, promoted by us, for the participation in the SDI American program.

TECHNOLOGICAL EVOLUTION OF THE PRODUCT

To keep in line with the most advanced concepts of aeronautical technology, applicable to both airplanes and helicopters, it will be necessary to study new formulas and new planning criteria, and to apply new technologies, especially in the field of composite materials and electronics; also required is an outstanding ability in the matter of systems integration, utilizing the numberless possibilities afforded by



informatics and avionic, that is to say, by electronics applied to the aircraft.

This evolution, while greatly simplifies, on the one hand, the steering and control of the aircraft, is, on the other hand, conducive to the realization of complex systems, i.e., to a growing level of integration of the electronic devices, which have acquired a weight by far prevalent in comparison to the value of the machine.

Also from this angle, the evolution of the helicopter that, owing to its operational peculiarities for both military and civil uses, has turned into an irreplaceable means, represents an interesting example.

The leader of this evolution was Agusta, which, starting with the production under licence in the fifties, rapidly succeeded in acquiring the skill of autonomously developing its own machines, that are today on the forefront, for the high technological level attained.

The "A 109" helicopter, the

first to be planned and realized entirely in Italy, has represented the turning point in this process, for it allowed to be present on the world market with a prestigious machine, whose characteristics have, from many angles, anticipated the development lines of the products of the most renowned competitors.

But the realization that has allowed Agusta to make a true "generational leap", in terms of project philosophy and use of the most advanced technologies, is that relating to the A 129 "Mangusta" helicopter.

The development of this machine, realized, as we have previously mentioned, to meet the operational requirements of the Italian Defence, has given the opportunity of identifying the basic technologies utilizable, through suitable adjustments, according to a notion of "family" of machines, also for other realizations.

Among these realizations, new versions are being

The development of a "convertiplane", envisaged by the Eurofar program, conceived in the framework of the Eureka program, represents the realization of a machine capable — thanks to the adoption of swinging rotors — of combining the advantages of the helicopter with those of the airplane.

developed, for military and civil applications, that have some essential components, such as the dynamic units, in common with the "A 129", and whose conformity with the different operative missions is obtained by integrating the machines with suitable equipment items.

The "A 129" helicopter is capable of flying by night, and this is made possible by the installation on board of devices for infrared vision; it is provided with the equipment for completely automatic target identification; the training of weapons is dependent upon the movement of the pilot's head, and sighting takes place by simply observing the target.

All these devices and the relevant functions are integrated



The utility version of the A 129 represents the most advanced combat-support helicopter, with extensive capacities of tactical transport and a very high degree of safety, both active and passive, for the support of troops, with an outstanding capacity of being operationally integrated with the "Mangusta".

by means of computers on board, that allow the real-time processing of all the data needed for carrying out the missions.

Lastly, the convertiplane, as previously mentioned, might prove to be a turning point in the helicopter's progress, in that it allows to overcome the handicap caused by the helicopter's rather poor translation speed. It is provided with a wing to the ends of which two engines are fixed, that can perform a 90° rotation, thus providing the drive required for takeoff when they are horizontal, and the propulsion needed for translation when the rotor's plane is vertical. Maximum speed might exceed 275 knots (510 km/h), the

maximum overall weight might exceed 20 tons. Clearly evident are the possibilities afforded by this machine for civil uses: connection of town centres, or between airports and cities, that would allow to reduce by a remarkable extent the time required for covering the distance, thanks to the practical abolition of unnecessary stoppages.

All this does, however, imply a revolution in the town-planning structure of our metropolitan areas as we know them now, and a suitable body of rules, that today is practically nonexistent.

THE NEW PROFESSIONAL FIGURES

As I previously said, the deep changes that have resulted from the technological advance and from the introduction of new techniques, ranging from informatics to electronics, to telematics, not only in the production process

but also in corporate management, have made the recruitment of personnel capable of performing the duties required by the new professional figures that have emerged, an exceedingly difficult task.

This critical problem has already made itself felt in the difficulties the companies of our group are experiencing in finding qualified technicians, especially at the middle management level, capable of providing an immediate operational contribution in the implementation of the demanding programs that we have just mentioned.

The development of these programs and, more generally, of the activity in the aeronautical and space field, in the next decade, is liable to undergo an involutive process, with unpredictable consequences if a qualitatively and quantitatively adequate staff is not available; all the more so, because the training of aeronautical and aerospace

technicians requires long periods of time, no less than 6-8 years.

As is obvious, technological development has not only involved the planning and production sector, but it has also influenced, to a considerable extent, the corporate management itself, and it has provided new working opportunities for graduates in economic and juridical disciplines, thus expanding the traditional employment sector.

The social and organizational industrial context, that used to draw its human resources from the areas with a deeply-rooted aeronautical tradition, is today no longer in a position to cope — as Agusta has experienced in Lombardy — with the requirements linked with the deep changes that have taken place; it is actually impossible to deal with them using the traditional conceptual methods and categories, but a totally new approach is instead necessary.

Alongside the already known professional specializations, others have emerged; in the workshops: specialists in informatics and avionics, in numerical control machines, and those in CAD-CAM (Computer Aided Design - Computer Aided Manufacturing), who allow continuous dialogue between the designer and the computer, as well as an immediate utilization of the project data for production purposes; in the offices: office automation, and plenty of others.

A "culture" of change, capable of providing a more adequate awareness — rather scarce, indeed, except among the experts — of the intervened changes, thus becomes imperative, as we have already pointed out earlier in this article.

In the achievement of this culture, the school at all its levels, and the University in the first place, can make a basic contribution. In particular, a

closer and systematic cooperation is needed between the school structures and the labour world, capable of better finalizing the study courses with a training harmonized with the impetuous growth of activities which call for exceedingly high qualification levels in all sectors, economic, financial, scientific, technical.

The training in the strict sense of the word of technicians in the various specializations is not, broadly speaking, a duty that schools are called upon to carry out; it is, however, necessary that the training received may harmonically combine with that required for facing the immediately successive period, namely, the starting of the working activity within the firm.

These are intentions easy to set forth, but they prove much more complex when they are to be practically implemented; also because specialistic training in a strict sense, particularly for what concerns our activities, is a duty that only specialized enterprises or institutions are in a position to carry out. However, much can be done by schools to make the programs fit for the new realities brought about by the technological changes.

The competitiveness of our enterprises, stimulated by the strong international competition, is a community asset, in which all must concur: Universities, industries, research institutes and laboratories, both public and private.

Even the relations with the unions have changed in the eighties, and they have allowed to entertain an exchange of views on such subjects as productivity and corporate efficiency, in view of the unquestionable incidence they have on the future of the enterprises.

As far as we are concerned, to the need for the managers and for the operative cadres to adjust themselves to the new realities-also in connection with the corporate

reorganization performed in recent years - the leader of the Group, Agusta-S.p.A., has answered by organizing a number of training courses, availing itself, for the purpose, of the cooperation of consultants and specialized institutes.

Similar actions have been carried out in order to acquire new technical know-how in all sectors, with the obvious inclusion of the administrative field, so as to improve the level of training existing in the Company, and to bring it in line with that of the major competing companies.

Raffaello Teti



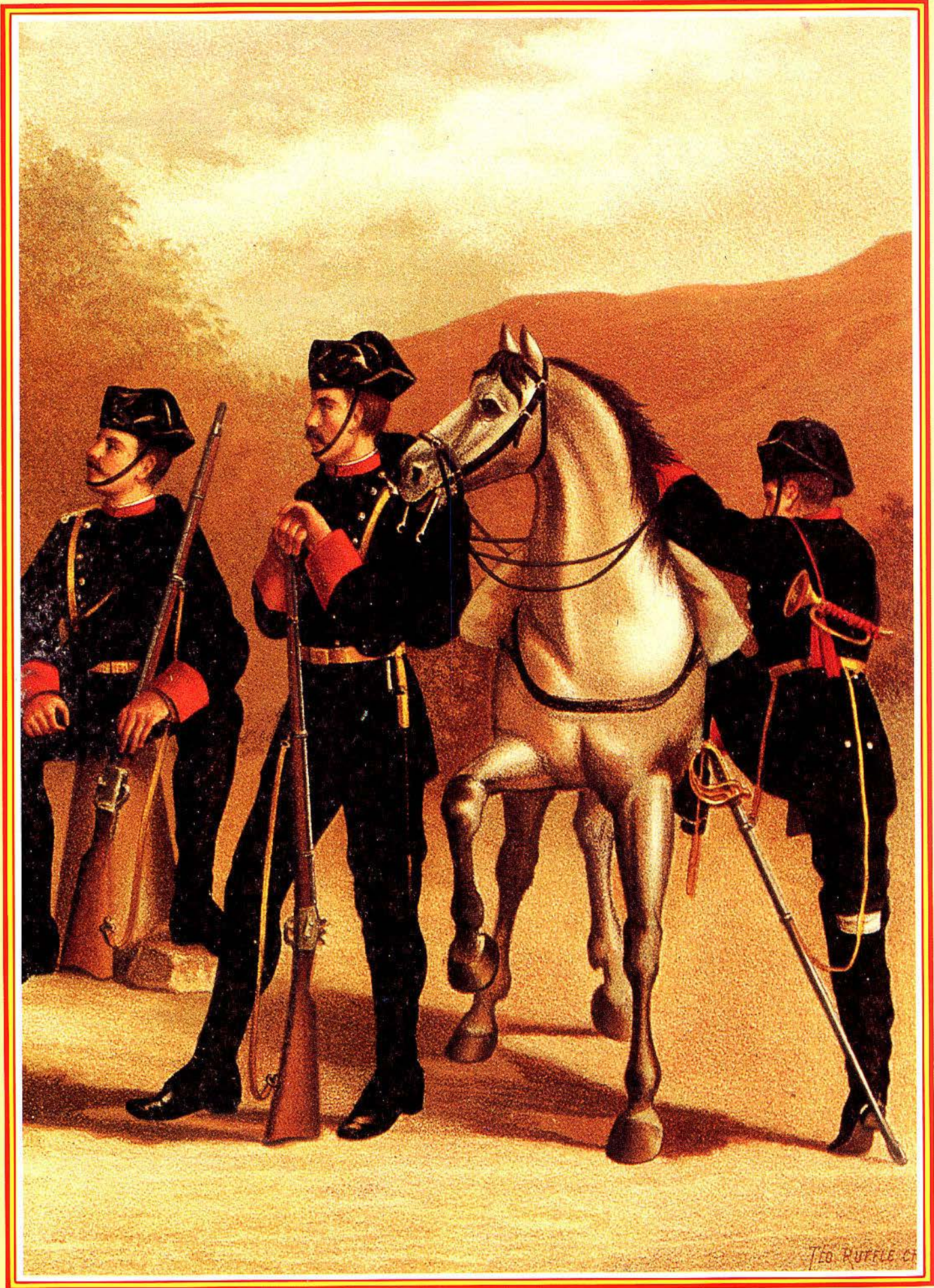
Raffaello Teti, 60, has a degree in Jurisprudence and is a specialist in Navigation Law. He is thoroughly acquainted with the reality and problems of aeronautics, and he is also an expert pilot with many thousands of flying hours. He was the President of Aereo Club d'Italia from 1967 to 1978, and reorganized and gave further impetus to the manifold activities of the Club, of which he is now the Honorary President. Vice-President of Alitalia from 1977 to 1981, a member of its Board of Directors and Executive Committee until May 24, 1983, Dr. Teti was a member of the Commission for the Reform of the Navigation Code, and is also a member of other important bodies in the aeronautical field. He was the rotation Chairman of AIA — Association of Aerospace Industries — from July 1983 to July 1984. He has been with the Agusta Group since April 1981 and he has taken the office of Managing Director on June 1983. Since July 1984, he has been the President and Managing Director of the Group.

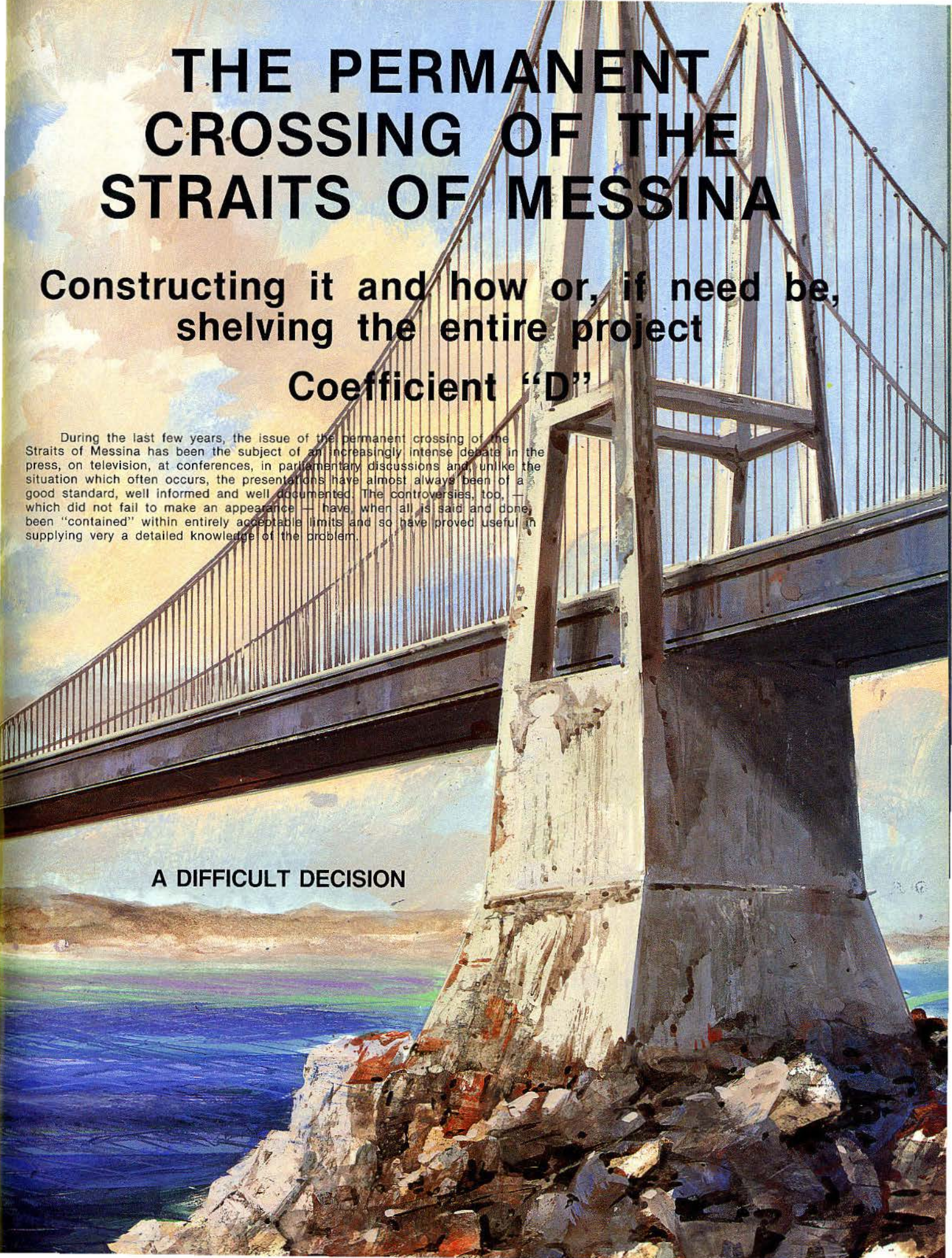
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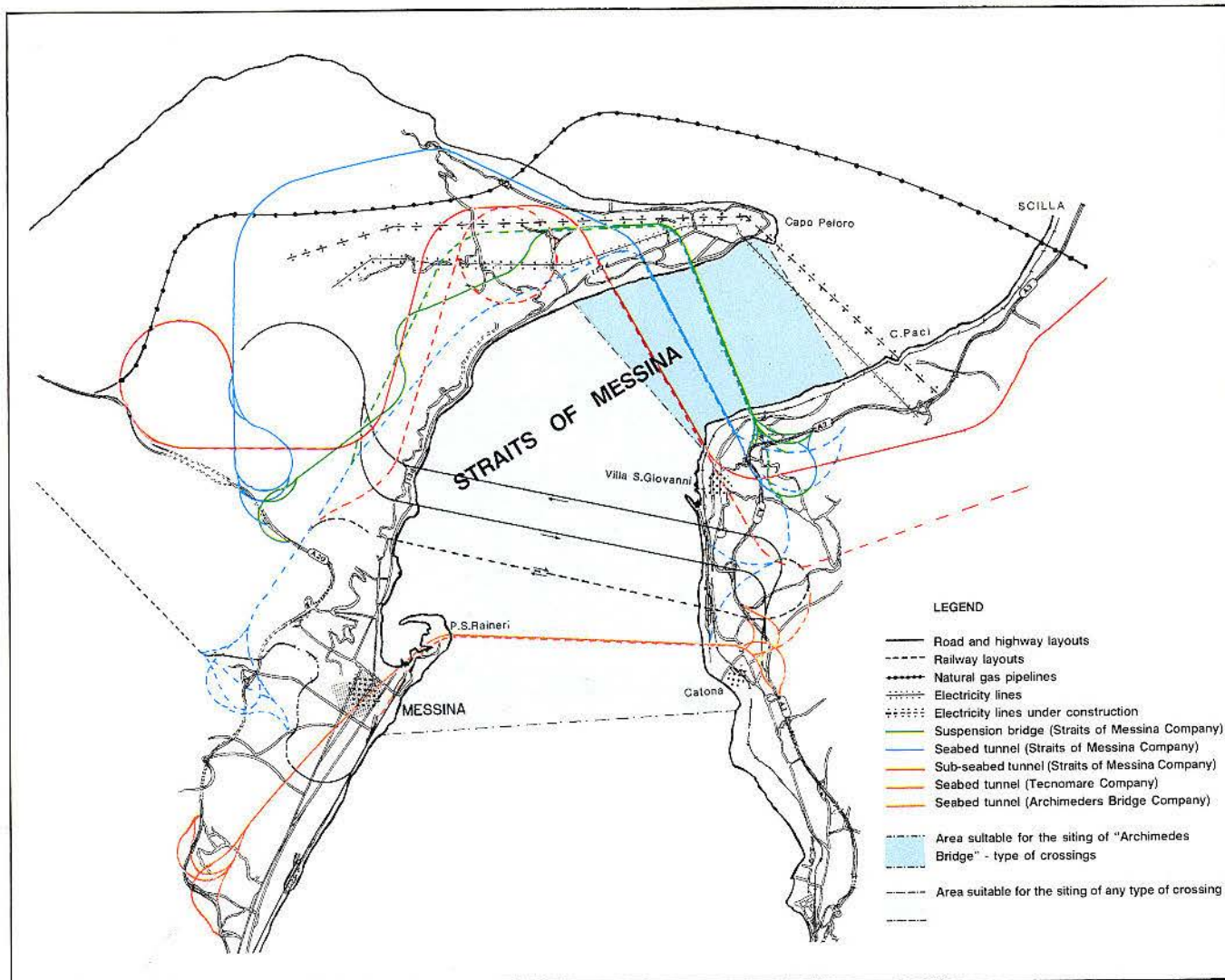
THE PERMANENT CROSSING OF THE STRAITS OF MESSINA

Constructing it and how or, if need be,
shelving the entire project

Coefficient "D"

During the last few years, the issue of the permanent crossing of the Straits of Messina has been the subject of an increasingly intense debate in the press, on television, at conferences, in parliamentary discussions and, unlike the situation which often occurs, the presentations have almost always been of a good standard, well informed and well documented. The controversies, too, — which did not fail to make an appearance — have, when all is said and done, been "contained" within entirely acceptable limits and so have proved useful in supplying very a detailed knowledge of the problem.

A DIFFICULT DECISION



So how was the situation and how, more or less, are things now?

This time we can quite easily skip the over three thousand years of rather well-documented past history which, as a matter of fact, have nothing very interesting to tell us about the permanent crossing of the Straits of Messina: just a few odd stories of questionable reliability, some plans for an undersea tunnel between the second half of the nineteenth Century and the first half of this one, and, lastly, several studies and geological prospecting results from the period following the Second World War.

It is necessary to come as far as the international competition for ideas announced by ANAS in 1969 (1) to see the first broad range of

possible solutions. The design-ideas submitted numbered almost 150, many of them rather well-planned, even if only a few received prizes. Later, in 1971, Parliament passed a law (2) by which it was established that the permanent crossing of the Straits of Messina — a work of national interest — should be **by both road and rail** and that the study, design and construction as well as the road facilities should be entrusted to an ad hoc stock corporation set up mainly with capital from IRI, ANAS, FS (State Railways) and the regional local authorities involved. However, the actual foundation of the company which took the name "Straits of Messina", was to occur only in 1981.

With an interministerial decree dated December 27, 1985 came the settlement of the

Preceding page.

Suspension bridge, a permanent link typology considered feasible (1st solution).

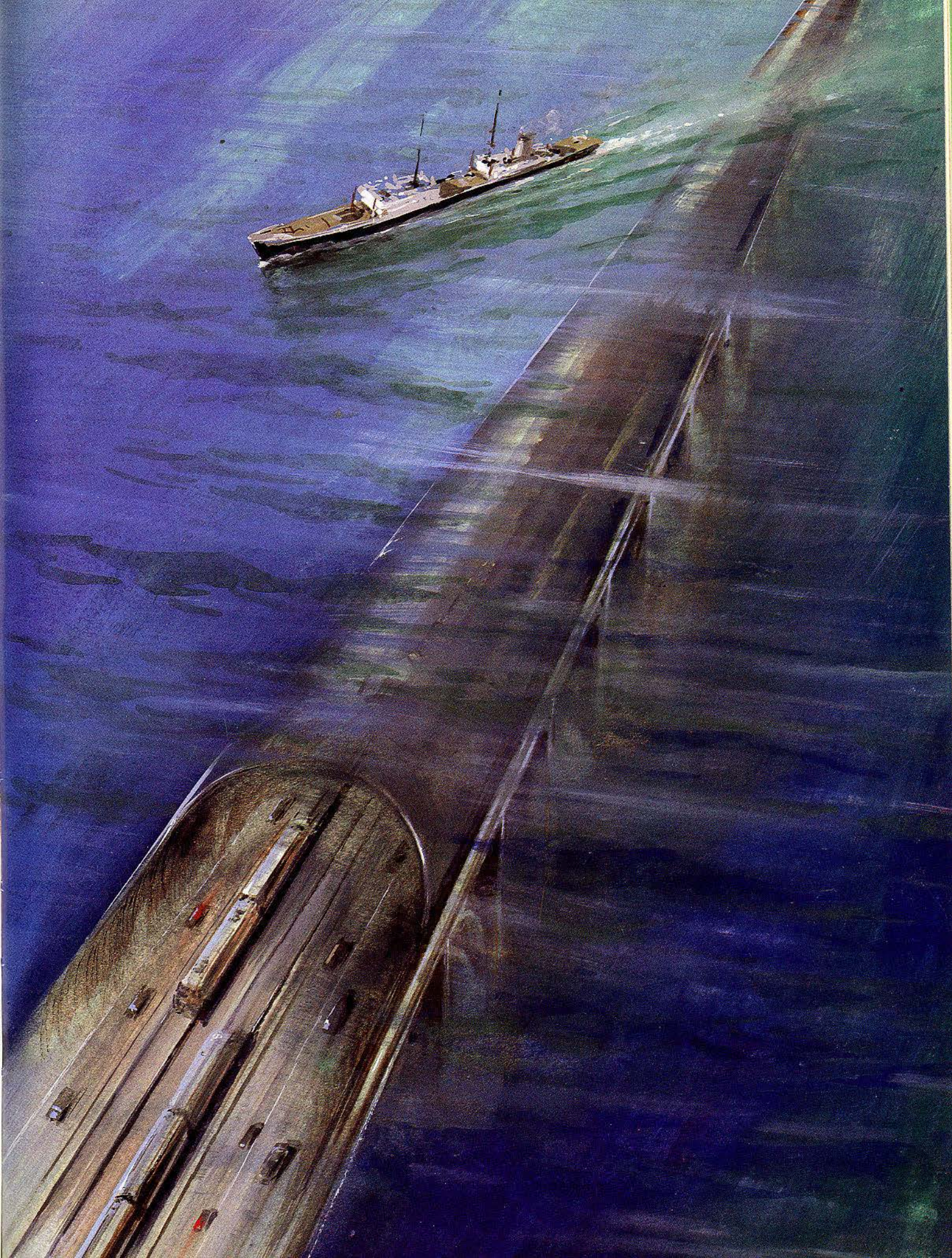
Above

Siting of the crossings in the proposals which have more likelihood of being built.

Right

Seabed tunnel, another typology for the permanent crossing (2nd solution).

question regarding the financing and "regulation" of the work by the company for completion of a technical/economic feasibility study and the typological decisions regarding the work necessary to cross the stretch of sea which — at its narrowest point — spanned



three thousand meters.

In 1986 the Company formally submitted the feasibility study it had carried out on three possible solutions (3) all envisaged in the same area of the Straits corresponding to the minimum distance between the two banks.

All three solutions:

- triad of sub-seabed tunnels side-by-side (two roads and a railway with relative service tunnel);
 - single road and rail tunnel on the seabed;
 - single-span road and railway suspension bridge;
- were declared feasible but the "single-span road and railway suspension bridge" was indicated as the "optimal typological solution from the various technical, environmental, entrepreneurial and socio-economic standpoints".

At this point, the Higher Council for Public Works and the two organisms most involved, ANAS and FS were called in, each nominating their own commission of experts to give an assessment. Their opinion on the viability of the work done by the Straits Company, on both the technical and economic planes, was expressed to the respective Administration Boards in the early months of this year.

In particular, the FS Commission recommended that the general design be commenced with the preliminary examination of the questions regarding the competence of the Ministries of Defence and Civil Protection, in addition to those relating to defence against sabotage. The Commission has also ascertained that for the "suspension bridge" solution the dreaded problems of railway practicability do not exist.

From the technical viewpoint, many doubts have been overcome even though several further checks of a

TECHNOLOGY

As regards the sub-seabed tunnel, the experience gained with the great railway and road tunnels built through the Alpine and Apennine regions enables an easy assessment and handling of any technological aspect.

For the single-span suspension bridge, technologies which are equally well-known are available but they have been applied to structures which are far less imposing (13) and in any case not in Italy. Moreover, there are only very few examples of large suspension bridges built for railway traffic (the "George Washington" in the United States, the "Salazar" in Portugal and the "Akashi Kaykyo" in Japan), but in no case has train passage actually been activated, although it is said that the Japanese bridge was not opened to rail traffic merely for reasons of an economic rather than technical nature.

On the other hand, for the seabed solution there are no significant precedents, but in off-shore technology (14) our firms are world leaders. Suffice it to think of the underwater natural gas pipeline laid between Tunisia and Sicily precisely in correspondence with the Straits of Messina, or of the large platforms for sea oil prospecting. In addition, the study of an early construction of this type in the Norwegian fjord of Hogs was entrusted to three companies from the ENI group (SAIPEM, SNAM PROGETTI and TECNOMARE) which have a vast experience in off-shore works in all seas.

All things considered, the seabed choice would have the advantage of acquiring a record in a new sector, which would definitely afford worldwide exportation of genuinely Italian technology.

The Straits Company has, however, decided upon the "suspension bridge" solution, more tested, even if on a far smaller scale, and not entirely translatable for application to the specific case. Nevertheless, the image effect for the Italian technical-industrial world would most definitely be significant in both cases.

INFLUENCE ON SEA AND AIR NAVIGATION DURING THE CONSTRUCTION PHASE AND IN OPERATION

Everyone agrees that none of the three solutions affects, at least not to a significant extent, sea and air navigation when in operation (15), while for construction there are conflicting opinions regarding the suspension bridge and the seabed tunnel.

The "Straits of Messina" Company estimates that the construction of the seabed tunnel might entail the closure of the Straits

to navigation, in the longitudinal sense for eight years, while for the suspension bridge the interruption would be limited to a year.

However, it seems that these indications are not entirely convincing in that the seabed solution "favoured" by the Company is not the only possible and, on the contrary, those preferred by others or under study do not involve any interruption to navigation.

So it does not seem rash to think that in regard to this parameter it would be difficult for the suspension bridge to gain favour; far from it.

Concerning the possible impact of sinking ships or of submarines on the seabed structure, one has the feeling that the problem has not been thoroughly studied as yet. However, in a first approximation, it does not appear to have a potentially determinant or discriminant value.

DEPENDENCE ON METEOROLOGICAL AND SEA FACTORS

For this parameter too, opinions regarding the absolute independence of the sub-seabed solution from the winds and currents evidently match, but, for the suspension bridge, wind constitutes a serious problem. Often quoted is the famous episode — captured in an impressing documentary film — of the collapse of the Tacoma suspension bridge in the United States, which occurred in 1940 because the span went into resonance, owing to a wind of only 16.6 meters per second.

Nevertheless, it does seem that all the problems posed by the wind have been resolved, in the sense that the inevitable oscillations will be contained within limits such as to never (or almost never) involve the closure of the road and, above all, rail traffic.

However, a very wide structure will have to be built in order to enable rail use as well as road traffic.

As regards currents, which in the Straits are strong — maximum recorded value 3.1 meters per second — problems arise instead for the seabed solution but, according to some, simply because the Straits Company has mainly considered a layout corresponding with the point of least width, where the currents are stronger.

The true supporters of this type of solution, on the other hand, have always proposed and envisaged building the crossing — even if mainly for reasons other than currents — in an area where the Straits are far less "strait" and the currents far less "current".

Nevertheless, the technicians — including those of the Straits Company — agree that, in essence, sea currents — which, inter alia, are of an intensity less rapidly variable than air currents and therefore intrinsically less dangerous — do not constitute a discriminant problem for the choice of the best typology.

Facing page

Sub-seabed tunnel, a further alternative for the permanent crossing (3rd solution).



geological nature must be performed. There was also some reservation regarding the profitability of the undertaking. However, preference for the "suspension bridge" solution was confirmed even if the general plan was postponed pending the final decision for either the single-span solution or that of two spans with an intermediate pier.

Following the opinions and typological decision given by the two Administration Boards and the Ministry of Transport (4), the Straits of Messina Company will be called upon to prepare the general design already financed with the '87 financial law. Work could be deferred for a certain period, of the order of six months or perhaps longer, so that the outcome of the studies independently commenced by a working group from the University of Pisa together with several companies, commissioned by ENI — but with the consensus of IRI - (SAIPEM - SNAM PROGETTI - SPEA - TECNOMARE), may be known; these studies are for a seabed tunnel solution arranged differently from the one chosen by the Straits Company. In any event, it is to be believed that within a couple of years the difficult final decision which will give the go-ahead to a virtually irreversible process will be reached. Parallel to the technical-economical debate there will no doubt be a heated political debate, such as the issue merits. Judicial delays and "additions" and even "shelving", temporary or otherwise are, therefore, to be considered among possible hypotheses.

Once the final design has been made ready, the Parliament in office — let us say before the end of 1990 — could vote on the financing (5) for the preparation of the executive plan and then for the setting underway of the works.

After that... after that it is frankly of little use to give any indications, however vague, save perhaps for an order of magnitude of less than a decade for the completion of the work.

THE SEISMIC RISK

This is a serious danger which perhaps will command additional investigations whatever the typological decision taken, and the Minister of Civil Defence has already made mention of it.

We all remember encountering in our atlases at school our first "fault" which corresponded exactly to the Straits of Messina; one expert in the field has been heard to claim that one of the pylons of the suspension bridge would be exactly in line with it. Perhaps this is just "spite", but it is difficult to escape the fascination of the incredible, particularly since further "checks" will most likely be made on the geological aspects and they could remove the characteristic of "malice" and give to the rumor that of "credibility".

In any case, everyone seems to be in agreement as far as regards the risk assessment for the sub-seabed tunnel, a risk which is quite considerable because any moderate slide of the fault, which would be crossed by the tunnel, could cause its

irremediable and complete loss.

There are conflicting opinions on this point, since solutions with telescopic sleeves and joints do exist, which allow the effects of seismic movements to be effectively absorbed.

The condemnation (16) for this one parameter appears difficult to avoid, even though there are others which contribute to putting precisely the most traditional solution out of the running.

On the other hand, the suspension bridge appeals to its inbuilt elasticity, which allows it to stand tremors 9 degrees Richter with no catastrophic damage.

In essence, these capabilities are also recognized in the seabed tunnel which some suspect, nevertheless, to be less resistant to the seaquake effect, almost always connected to earthquakes even though, to tell the truth, it is little known.

Nevertheless, it must be said that some reckoning can be done on this subject and therefore the technicians can put in a decisive and convincing word, albeit within human limits.

THE TYPOLOGICAL CHOICE CRITICAL ASPECTS

The typological choice is, after all, the fundamental choice from which all the others are to follow and indeed it is the first and most important response which — as said earlier — the Straits of Messina Company has actually been called upon by Parliament to give. However, the choice will be made, and it would be difficult to do otherwise, by means of a series of relative comparisons on the basis of the attribution of ponderable values to the various parameters in order to arrive at a numerical evaluation. The most effective way to illustrate the three fundamental typologies may be, therefore, to attempt an identification of the positive and negative features of each one as compared in the appendix.

To put it briefly, the most critical aspects, those which have been questioned the most, concern — for the suspension bridge type solutions — the three thousand-meter length which hitherto has never been crossed with one single span and mainly the particular

difficulties in guaranteeing the regular transit of trains at a useful velocity.

For each type of solution the following should be highlighted:

- difficulties in the natural environment, chiefly the well-known feature of the Straits area, namely that it is somewhat subject to seismic events and active faults are present, but also, with the exception of the sub-seabed tunnel solution, the hazards from strong sea currents and winds;
- aspects relative to the environmental impact linked primarily to the bridge solution, which requires huge railway and road access ramps and, to a lesser extent, to the seabed tunnel solution in regard to the impact on the sea ecosystem;
- economic aspect: the necessary investments — there is talk of figures of around eight thousand billion lire to be invested over a period of approximately ten years — could, according to some, "not be recovered", since not even the most optimistic of hypotheses on the maximum volume of traffic would cover the charges incurred by the



Seabed tunnel proposed by Tecnomare as a variation on the 2nd solution.

maintenance and management of the work. Added to this is the evaluation that, in any case, with a sum of that size many other more serious and pressing problems of Sicily and Calabria could be solved and probably create more local long-term employment (6);

- lastly, something which has mainly come to the fore recently, the aspect of vulnerability and the relevant defence requirements.

On this latter subject, which is the one of greatest interest to us, very little has been said so far.

There have been only a few statements made by executives from the Straits of Messina Company, according to whom — as reported in the press — the suspension bridge, besides

being able to come out unharmed from a tremor of grade 9 on the Richter scale and being able to bear winds of up to 200 km per hour, could even resist a nuclear explosion (of undefined power, by the way) at a distance of 500 meters.

Moreover, there have also been some signs of response to the so-called strategic questions with the statement (7) that "once the typology was chosen, there would be talks with the military, even if problems should not arise because the 'bridge' has also been designed to be crossed by tanks".

Someone who became involved in this some time ago is Elio Maticena who, on contacting the Chiefs of Staff to submit his own plan for the "Archimedes Bridge", had taken care to guarantee this possibility.

The permanent crossing of the Straits of Messina, however, involves the construction of something which, whatever the

typology chosen, will become a "sensitive point" of strategic dimensions probably incomparable — from this viewpoint — with any other target existing today on Italian soil. Firstly, since it is an essential link for the economic life and nourishment of an island with around 5 million inhabitants, representing a portion of the order of 10% of the Nation.

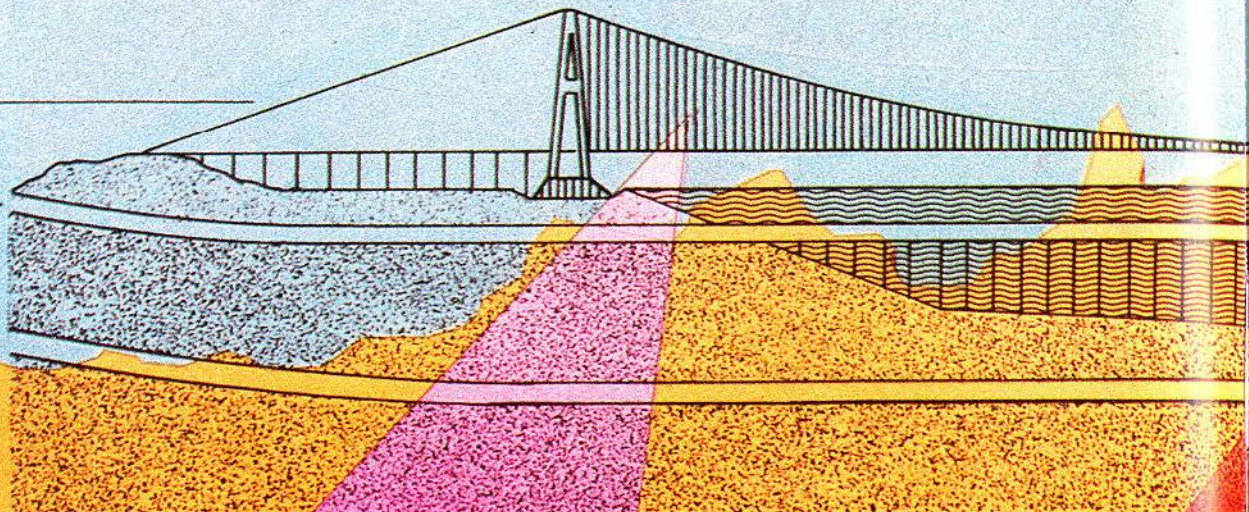
Secondly, it is by nature a **paying target** with respect to the results which can be achieved in relation to its vulnerability. In other words, there is an exceptionally favourable relationship of cost (offence)/effectiveness (of results attainable) for every potential hostile element.

The outcome of an attack against this infrastructure would be "momentous", not only because of the practical consequences deriving from the possible physical interruption of a connection which, once built, would soon become practically

AER SOLUTION

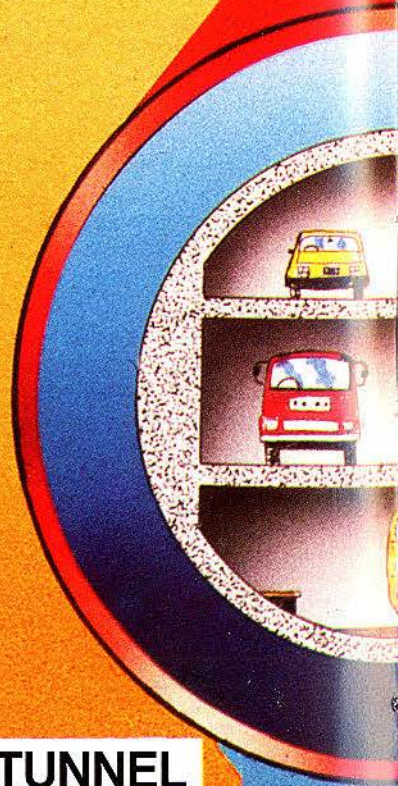
SEABED SOLUTION

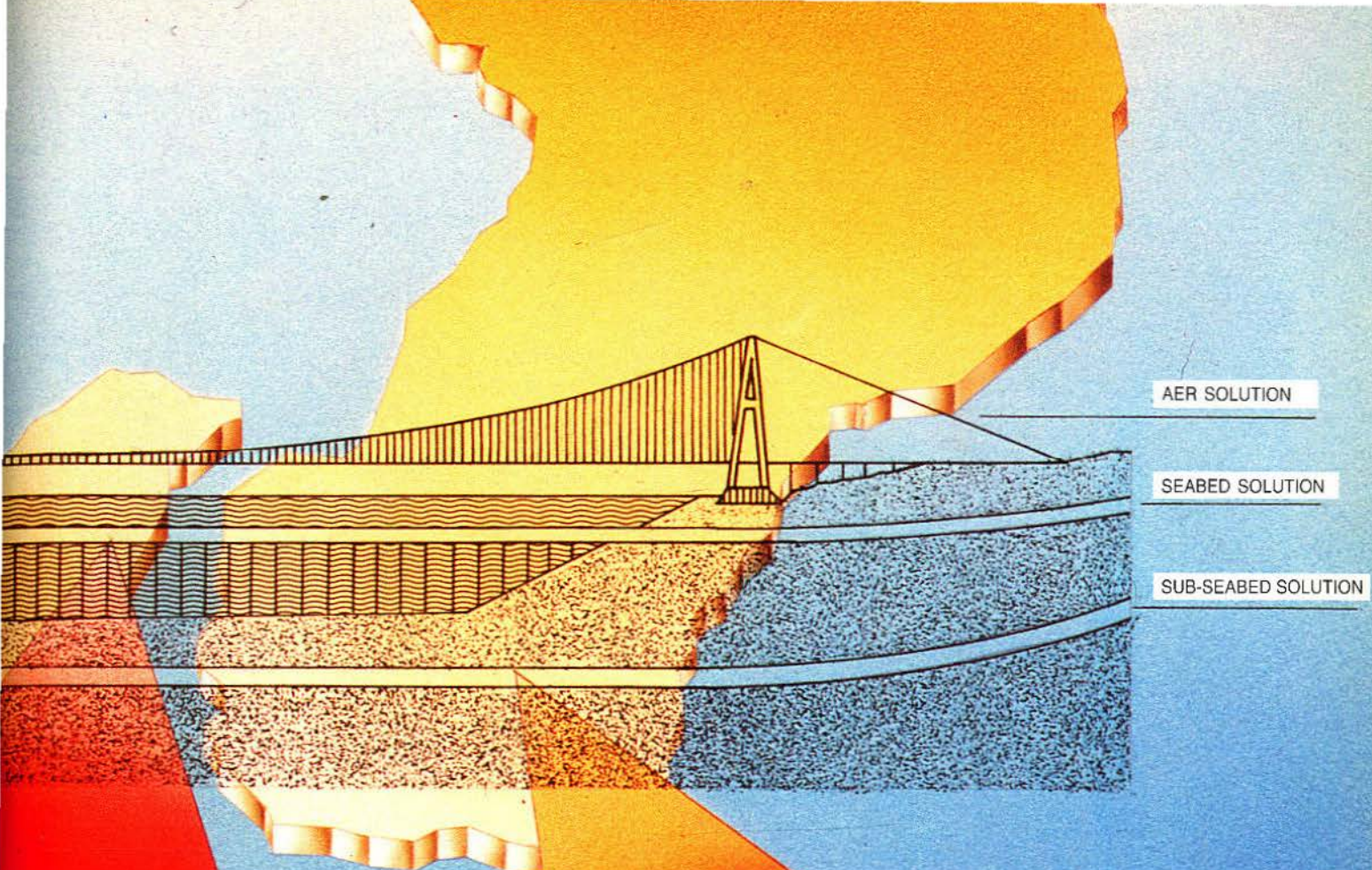
SUB-SEABED SOLUTION



SEABED TUNNEL

SUSPENSION BRIDGE





AER SOLUTION

SEABED SOLUTION

SUB-SEABED SOLUTION



SUB-SEABED TUNNEL

vital, but also in regard to its value as a "symbol", not to mention the political and psychological implications that a serious damage to the construction would assume.

Furthermore, the eventual "collapse" of the infrastructure, whatever the causes might be, may even lead to prolonged interruptions of shipping on the Strait in addition to the almost total loss of the construction.

Owing to these features, the infrastructure in itself is destined to "catch the eye" of all possible attackers, even minor ones.

The above negative aspects, although common to each of the hypothesized typologies (suspension bridge, seabed tunnel, subseabed tunnel), are present to varying degrees — an attempt will be made below to clarify this — in all three solutions.

VULNERABILITY

The suspension bridge is the most vulnerable, in that the entire infrastructure is exposed to any kind of attack carried out with sea and air carriers or missiles and each point is vital for survival. No type of electronic masking can be surmised for a target destined to give a radar echo which may be picked up from a very great distance even with apparatus not particularly sophisticated; therefore, also a protection from attacks conducted with non-ballistic means would require a continual surveillance of a vast area of the sky, sea and ground.

In any event, a substantial, permanently activated anti-aircraft and antimissile protection — and this is probably the heaviest burden, the running cost — should be set up with multiple air, missile and artillery systems, both on land and on board.

On the other hand, the power of any device eventually used by the attacker would have to be quite considerable in order to inflict irreparable

ECOLOGY AND ENVIRONMENTAL IMPACT

For the sub-seabed tunnel there are many advantages, or at least fewer problems, even if they do not serve in compensating for the definite drawbacks in other sectors.

Nevertheless, the areas to be expropriated are very small and the influence on the landscape is not significant, limited as it is to the access ramps.

There is, on the other hand, the problem of the greater quantities of material dug out, which may be difficult to dispose of on land. It could be thrown into the sea, provided this is done in the open sea and in a non concentrated fashion, but the costs would be much increased.

In any event, the situation with the suspension bridge is the opposite, because the areas to expropriate are very large and the impact on the environment is evident and macroscopic, even though the views on this are primarily of an aesthetic nature. It is not true to say, however, that every construction which is to be inserted into the environment in a traumatic fashion will only have negative effects. In fact, many claim that the bridge — quite a feat for man to accomplish — would harmoniously blend with the magnificent ambience of the Straits and actually even become a world attraction. I think that one cannot but agree with this statement. Less evident at first glance is, instead, the environmental impact of the road and rail access ramps; since the bridge is 80 meters above sea level the ramps extend for many kilometers: altogether 18Km for the roads and 28Km for the railway.

These ramps really could not pass unnoticed and it is difficult not to fear that they would completely upset a land whose immense charm lies in its natural condition.

The problem of the ramps and of the areas to be expropriated also exists for the seabed tunnel solution, but to virtually the same extent as the favourable one of the sub-seabed tunnel, in that they immediately go

underground and the differences in level — among other things — are more contained since they do not exceed 60 meters.

For this solution though, there is the accusation — rather heavy at that — that the marine ecosystem may be seriously damaged, with the risk of the migration of many fish species, including tuna and swordfish which are so important in the South. Furthermore, the system of currents would also be altered with unpredictable effects on the coastlines.

The doubt that these are real dangers exists, even if the obstacle does not seem to be high enough (27 meters over at least 100 meters of depth) to cause extensive damage.

PSYCHOLOGICAL ASPECTS AND TOURISTIC IMAGE

Regarding these aspects, no difference seems to emerge in the assessments and this time the classic underground tunnel finds itself in the "bad" company of the undersea one: no attraction for tourists and little sympathy from the users, especially those on tires.

For the bridge, instead, the interest for tourism of the work itself is evidently very great and in all likelihood, because of the prestige of such a construction, will be the deciding factor in the possible choice in its favour.

Economically speaking, the positive effects, are, indeed, of great import for the whole South even if there are, as is always the case when one is dealing with something which attracts much attention, negative effects too.

Nevertheless, there will be many who will want to photograph the bridge from the banks but will be less eager to scale the ramps in their own cars; for all these people it will be necessary to continue the traditional ferry service and not only — as people will no doubt be saying later on — so that they can continue to take pictures of the bridge from the sea.

damage, since it would be necessary to either seriously damage the towers or shear at least two main cables to cause collapse; if only one cable or some anchorages were sheared, this would perhaps allow the resumption of operation within a reasonable length of time. Possible damages to the floor system alone could be repaired even faster.

In any case, the "suspension bridge" solution really seems to be the least sound from the point of view of defence. It would, in fact, entail considerable costs in

setting up an effective protection system.

On the whole, the seabed tunnel is less vulnerable — but not by very much — owing to the natural protection offered by the water, also with respect to the technical means for the acquisition of targets. Nevertheless, advantage may also be taken of this by possible "attackers" to approach the target with devious means. It would appear, however, that point damages, by torpedoes, mines or other devices, although capable of creating an even prolonged



Plastic of the suspension bridge

interruption of traffic, do not impose the need for total demolition and rebuilding, since individual segments of the "tube", or better, of one of the tubes, could in any case be recovered.

Reconstruction times would definitely be long, but the risks of prolonged interruption of navigation through the Straits do, nevertheless, appear to be minor.

The solution is, therefore, of intermediate validity: with respect to the bridge it is less vulnerable and less "psychologically" attractive since it does not possess "visibility" characteristics. At any rate, it involves lesser costs, albeit still considerable, for a possible protection.

Lastly, the sub-seabed tunnel is marked by a far lower vulnerability in that it is well-

protected in regard to all types of threat known today and defence may be limited to strict protection of accesses. On the other hand, it does present the drawback that any possible serious damage inside the tunnel — always possible even owing to natural events — could entail considerable problems for restoration and, at the worst, the complete loss of the infrastructure. Costs for protection would be very contained anyway.

COEFFICIENT "D"

"Defence" is undoubtedly one of the most important components in the organization of the life of a country and the specific parameter must therefore be considered alongside the technical and financial ones when large works, destined to challenge the centuries and to condition the life of future generations (8) to

a significant extent, are to be carried through.

Nevertheless, "defence" itself, as an essential presupposition of deterrence and détente, is a cultural problem unresolved by our society (9), one which, like several others, security and the environment for instance, on the contrary should involve everyone personally and constitute for each citizen a definite commitment which cannot be delegated to anyone else.

Fortunately, the world of the operators in the transportation and industry sectors, be they technicians or academics, operational or administrative staff, is generally showing greater interest in the "D" coefficient, and the State legislation assists everyone in not neglecting it beyond permissible limits.

Essential points of reference in this regard are the unhappily named "law on military servitude" of 1965

which at article 17 subordinates the building of large infrastructure for transportation to the opinion of the appropriate Territorial Military Command, and the Prime Minister's Decree of April 10, 1986 — better known as General Plan for Transportation (PGT) — which in article 39, with reference to the building of large infrastructure for transportation, stipulates that prior agreement be sought with Defence from the preparation phase of the general design and, at article 60, draws attention to the question of the vulnerability of the transportation system.

The latter is a call which goes for everyone, including the Defence Administration itself, which often seems to fail to remember that with regard to transportation, the Armed Forces are practically dependent — in our country just like in all others — upon the commercial transportation system. Nevertheless, in considering coefficient "D" in the transportation sector, one cannot do other than award a fair amount of attention to the way in which it operates as regards the financial aspect.

The PGT also provides its backing here and states (documentation referred to by article 39): "The additional costs consequential to constraints imposed by the National Defence requisites which could be called for, primarily in the completion of new works, cannot in any case be borne by the regular budget of the Ministry of Defence".

Regarding the issue of the permanent crossing of the Straits of Messina, Defence has already formally stated its case in general terms and will of course thoroughly examine the study underway on the general plan, with reference to a definite typological choice and location so that the final opinion envisaged by the law may be drawn up.

Whatever the typological decision, three precautionary requests from the Defence must be guaranteed:

ADVANTAGES RELATIVE TO THE TRAFFIC BETWEEN THE TWO BANKS

For the railway, but also for the roads, all three solutions do not involve speed limits of any significance but the length of the ramps, imposed by the need to avoid penalizing gradients, is such to completely exclude any profitable use for the local links between the cities of Reggio, Villa and Messina. In particular, for these localities there would not be any advantage anyway in either the underwater tunnel or the suspension bridge hypotheses: the beginning of the railway ramps — for instance in Calabria — would be placed around Gioia Tauro.

From the point of view of benefits to traffic, there is no doubt that the ideal solution is the seabed tunnel. In fact, thanks also to the fewer constraints on placement — unlike the suspension bridge situation, one is not forced to choose the narrowest point — and, above all due to the lesser differences in levels, it can guarantee better service, both to long distance transit traffic and to local traffic in the straits area.

SENSITIVITY TO SABOTAGE AND POSSIBILITIES OF ASSISTANCE

This kind of question has been tackled but, to be frank, it does not seem as though it has been examined closely enough.

Anyway, both the sub-seabed tunnel and the seabed tunnel have been deemed more vulnerable to sabotage and terrorism and it is difficult to fall in with this opinion (especially in regard to the sub-seabed tunnel). In point of fact, should a catastrophe occur, it really does not seem as though the suspension bridge can boast any advantage. More acceptable, on the other hand, seems the idea that the "greatest" difficulties — with respect to the suspension bridge — may be those of access for rescue and of evacuation in case of breakdowns and non-catastrophic accidents. These topics are discussed more thoroughly in the text of the article.

COST, CONSTRUCTION TIMES, EMPLOYMENT

As often happens, these parameters which are to be dealt with last are, after all, the most important, also bearing in mind that the minimum operational life of the work has been

fixed in 200 years.

The Straits Company assessments have all been to the detriment of the "lower" solutions, which would entail "higher" costs.

The cost and times of construction for the sub-seabed tunnel would be greater and they would also — but immediately some contradiction arises — be difficult to determine. This uncertainly leaves one a little puzzled, bearing in mind that for years, in Italy, we have done nothing else but build dozens and dozens of kilometers of railway and road tunnels in all kinds of geological situations although, to tell the truth, not under the sea.

There are also claims that the risks of accident and unexpected factors during the course of the work would be greater and the cost for management and maintenance would also be greater, because of the ventilation and lighting systems.

The effects on manpower specialization are limited and, after all, the socio-economic advantage of the investment would not hold good owing to the unacceptably low level of returns.

Worse still is the assessment for the seabed tunnel where the cost is not defined as higher but, together with the times, extremely aleatory (17).

Added to the higher cost for maintenance and ventilation are those for cathodic protection against sea corrosion, which actually seems to constitute a far greater restraint for the seabed solution than the meteoric one for the air crossing. In regard to the duration of construction, it must also be remarked that the longest experience here — referring to the off-shore platforms — is limited to 40 years. One further point which seems to be holding out is the uncertainty on the installation technologies, at the limits of current and foreseeable possibilities with a high risk of accident and unexpected factors during construction. The spin-offs on manpower specialization would be positive.

In short, less socio-economic benefits, considered, however, at an acceptable limit and not at a "definitely unacceptable" level.

At this point, everything seems to lean towards the suspension bridge for which cost and construction times, together with operating and maintenance cost (simple and safe servicing) would be less problematic and the synergies for the development

- the continuation of a ferry service — albeit reduced — ensuring the permanent use of the launching ways and hence the possibility of immediate restoration of an efficient alternative service, in the case of interruption of the permanent crossing (10);

- setting underway the arrangements necessary to guarantee swift restoration of navigation of the Straits of Messina and of the road links between the northern Calabrian coast on the Tyrrhenian and Reggio Calabria in the event of "collapse" of the construction,

of the national industry, in addition to the obvious positive effects on manpower specialization, would be greater. There are, however, still many "ifs and buts" and it seems that, also with regard to this aspect, the seabed solution is far from being out of the question.

CRITICISMS AND FEARS

They were bound to materialize and, apart from anything else, many different people contributed to quite a number of detailed studies. In truth, according to some who have read the summary report by the Straits Company, it even seems that this document was rather inadequate, precisely since it was not very convincing, owing to the obvious "slant" in favour of the suspension bridge solution. Certainly, a far different matter is the whole mass of documentation reviewed and on which the technicians alone have given their opinion or will do so, but for the decision-makers the summaries are the only readable documents and hence the ones upon which decisions will be based.

So here we have the old controversies coming back into the picture again, controversies linked to the fact that the men who count in the Straits Company are in part originally from the pre-existing "Bridge Company" (from which the new Straits Company acquired the studies) and, therefore, they would operate essentially in a "preconceived" manner, constructing arguments *a posteriori* in favour of an already "selected" solution.

The important thing though, is that the data collected have all been processed and that the studies have been conducted most thoroughly. The technicians from the Railways, from ANAS and from the Universities are the people who must later communicate their final assessments, the only ones which really count.

OTHER ALTERNATIVES

One has already been mentioned, the one which "throws into the sea" any other innovative solution and aims at a concrete, rapid and "safe" intensification of the current ferry service. The Bridge Company has entirely discarded this, but perhaps its validity remains all the same, even if it has the serious drawback of hindering the important longitudinal open-sea traffic.

In the first place, since the actual crossing only takes 35 minutes, the frequency of the service is very high and the operations for boarding vehicles on to private ferry boats are very fast. Since the permanent crossing would involve crossing times of no less than 20 minutes, one can see at once that the advantages

for motor vehicles would be significant but not exceptional.

For the railway the matter is a little different — but not so much — also bearing in mind that boarding and disembarking operations can be rationalized and shortened and that technological shortening margins also exist for the crossing time.

Secondly, as will be seen later on, even if the permanent crossing were to be built, a reduced ferry service will also have to remain in operation.

More interesting, however, is the fifth alternative — this has also been mentioned in the text — which began taking shape recently, to the point where it received a subsidy of several billions from ENI, significant in many ways, for the completion of a feasibility study on a seabed tunnel alternative to the one prepared by the Straits Company, consisting in one single road and rail structure situated in the narrowest area of the Straits.

Here, instead, three tunnels are envisaged, two road tunnels for the two directions and one tunnel for the two tracks.

Its location is envisaged more to the South, in an area similar to the original Mataracena design for the Archimedes' Bridge (18) and considers two different alternatives for the rail tunnel which could also be non

parallel to the remaining two.

This is a brilliant solution since it optimizes Mataracena's ideas by moving the location of the infrastructure to an area of the Straits which allows minimization of the ramps and maximization of the benefits for local traffic between the two banks without affecting, and in actual fact even improving, the short-distance traffic.

Moreover, the subdivision in three cylindrical tunnels of dimensions which are obviously smaller than one single road and rail tunnel, facilitates construction and, above all, enables work to proceed gradually by using the first tunnel immediately and constructing — or not — the others also bearing in mind the earlier construction and operational experience.

Lastly, the availability of three separate structures would give a far greater guarantee of security and continuity of connection, since the risk of having the three "passages" out of order at the same time, owing to natural or artificial catastrophes (17), would actually be smaller. To sum up, one could say that certainly at the moment one would not bet on this solution as favourite, but in the end it could emerge as an outsider, bearing in mind that the "road" still to be covered stretches out far before us.



due to natural or artificial causes;

- increased allocation to the Defence budget to meet the higher expenses which will no doubt be incurred — within the framework of the joint missions involved (11) — in order to ensure a minimum of permanent protection from the most dangerous threats. The amount can be decided upon and inserted into the financial calculations for the building of the permanent crossing once the typology has been finalized and the methods and minimum means needed to complete the project can be defined, and once the actual objective has been determined in terms of level of protection which is to be reached.

Certainly, coefficient "D" may have a lesser "bearing" upon the typological choice (12). Nevertheless, it can be said that, all other technical, economic, functional and political aspects being equal, the choice should be geared towards the solution which is least vulnerable and entails lower defence costs, which is actually the sub-seabed tunnel.

However, since this equality does not exist in point of fact and, indeed, the sub-seabed tunnel does seem to be out of the running, the matter also becomes more complicated since, while it is easy to establish an order of vulnerability, it is difficult to classify the typological choices on an exact scale of overall values. In particular, with regard to the two above-ground solutions, opinions may also conflict and it does not seem possible to differentiate the vulnerability values to any great extent.

After all, the best direction to follow would be to seek a diversified solution in which the rail crossing is separate from the road; this would permit, together with the reduced ferry service, the attainment of a lesser overall vulnerability with equal defence means, through the availability of several alternative solutions.

Of course, this diversification could entail greater costs but should the differences in expenses not be found to be prohibitive, there should be no hesitation in aiming, for instance, at a seabed tunnel solution for the railway and suspension bridge or "spaced out" seabed tunnels for the road.

Once again the difficult final decision cannot result from an impossible pondering analysis of the various factors but only from an overall political decision.

Brig. Gen. Gualtiero Corsini

NOTES

(1) According to provisions made by law no. 384 of March 28, 1968.

(2) December 17, 1971, no. 1158.

(3) A parallel study is also being done on a fourth hypothesis, namely, on keeping a suitably reinforced ferry service. This solution has been judged, however, not suitable and not economically viable.

(4) Following a recent reform of the State Railways, the Minister of Transport no longer heads the Administration Board but still holds the powers of surveillance and direction over the new rail Agency. The ANAS Administration Board is instead headed by the Minister of Public Works.

(5) In regard to possible external contributions to cover construction costs, the EEC has hitherto restricted itself to a statement declaring that it is "on the whole, in favour".

(6) Furthermore, the whole question is overshadowed by the danger that the Mafia sniffs the possibility of big "business" and stretches its tentacles.

(7) "Il Mattino" September 22, 1985 - Interview to Gianfranco Gilardini Deputy Manager of the Straits of Messina Company, by Oreste Barletta.

(8) Everyone agrees upon this, although on public occasions we are witnessing a sort of "dismissal" of the matter or, in the best of cases, complete delegation of the subject to others — in the case in point inevitably to the military — in the hope of lasting peace and the imminent universal disarmament or, more likely, only because people are aware that it is not a very popular subject.

(9) This is something which has, unfortunately, been discussed mainly by the military. See among others General Cappuzzo ("Quale Esercito?", published by Dino, 1985), even if recently some wise intellectuals and politicians have started to seriously look into the matter.

(10) Traffic for this service can be ensured — for instance — by favouring with an appropriate fare policy those who do not wish to use the permanent crossing, owing to alternative touristic

reasons, or fear, or in order to gain time (local traffic in the sub-seabed or suspension bridge hypothesis) and banning transit of dangerous goods on the permanent crossing.

(11) 2: Defence to the South, 3: Air Defence, 4: Operational Defence of the Land, 5: Peace, security and Civil Defence Actions and also 6th, requirements package: Infrastructure, Logistic support and Transportations.

(12) Some "bearing" it has already had, since the well-timed first formal opinion from Defence compelled everyone to reflect a little more upon the critical aspect of security and upon its related costs and perhaps it was not the last reason to encourage to wait for the outcome of other studies and better examination of certain solutions before embarking upon the final road.

(13) The longest spans constructed to date have been those related to the Akashi Bridge (Japan) 1,780 m, the Verrazzano (New York), 1,298 m, the Golden Gate (San Francisco) 1,280 m, the Bosphorus (Istanbul) 1,074 m and the Salazar Bridge (Lisbon) 1,013 m.

(14) Technical activity by which works are carried out in the open sea without direct operational and logistic support from the coast.

(15) Different, naturally, is the argument in the case of the double-span suspension bridge with intermediary pier.

(16) The Japanese are building, however, an underwater railway tunnel of no less than 54 km in a seismically active area to link the island of Honshu with that of Hokkaido. It is also envisaged that cables will be laid in the tunnel for telecommunications, the transport of electricity and, in a certain sense, it is to function as a road crossing by means of special rail cars. The work should be brought to completion by the end of 1987.

(17) When one says that the traffic across the Straits would be halted for around 8 years, it should also be pointed out that the works would take longer than 8 years.

(18) In 1984, the Archimedes' Bridge Company in the Straits of Messina, represented by Dr. Elio Matacena, drew up a plan for the permanent link between Sicily and the Continent, known as the "Archimedes' Bridge". The proposed solution of the permanent road and rail crossing over the Straits of Messina is constituted by a submerged structure of hexagonal section subject to a vertical upward thrust and anchored to the sea-bottom by a system of cables distributed along its entire length. The construction incorporates two three-lane roadways, in addition to an emergency lane in each direction and two strips destined to take the railway traffic.

(19) It is true that these studies began late but among the Companies carrying them through is SPEA, the same company which was entrusted by SEALINK with the preparation of a competitive project (Channel Expressway) for the construction of the Channel tunnel, arriving second place in the competition launched by the British and French Governments.



6TH DRAGOONS.

ANTIRADIATION MISSILES A DEADLY THREAT TO MODERN ANTIAIRCRAFT SYSTEMS



THE ORIGIN OF THE ANTI-AIRCRAFT WEAPONS

A radar may be described as an apparatus which utilizes a band of electromagnetic waves to explore the surrounding space. This operational mode affords the achievement of performances otherwise inconceivable with alternative sensors, although it does entail the presence of a radar station which may be easily discovered by anyone able to intercept transmissions. This information may be put to use by the adversary in an attempt to destroy the transmission source, thus counteracting any eventual threat associated with it. The brief but intense history of electronic warfare demonstrates that attempts have been made in this sense since the dawning of radar.

In 1944 many German night fighters were fitted with suitable devices to intercept signals emitted by the radars of the Royal Air Force bombers engaged in the air attacks over Germany. One type of apparatus, with the code name *Flensburg*, was tuned into the transmission frequency of the *Monica* radar, installed in the tail of the bombers to give early warning to the crew of the approach of an attacker. A second device, known as *Naxos*, was able to survey emissions from the HS2 radar, used during navigation and to identify targets. This apparatus, used in conjunction with the board radars *Lichtenstein*, permitted the German fighters to inflict heavy losses on the British formations. Their existence was kept carefully secret, and it was only in July 1944, when RAF technicians had an opportunity to examine the *Flensburg* apparatus of a captured *Junkers 88* night fighter, that it became clear that the *Monica*, rather than protecting the bombers, facilitated the attack manoeuvres of the German planes. Other attempts followed these, but only around twenty years after the airborne clashes in the German sky was a definite leap in quality achieved, by utilizing an apparatus to survey radar signals, not to give an operator sighting indications, but to directly provide guidance information for missile-type arms. This development was made possible by the advanced process of electronic component

miniaturization and was accelerated by the new need to counteract anti-aircraft missile systems guided by radar. This threat had become a reality on July 24, 1965 when an F4 *Phantom* plane of the USAF, engaged in a bombing mission in North Vietnam, was downed by a Soviet-made SA-2 surface-to-air missile. Technical resources were rapidly mobilized against this fearsome opponent and one of the results of the effort made was the AGM-45A *Shrike* missile, able to guide itself into the enemy radar stations, using their electromagnetic emissions as guiding signals. Arms of this type, generally indicated by the abbreviation ARM, initials of the expression *Anti Radiation Missile*, today figure in the inventory of many air forces and in the recent past have been used on several occasions. After Vietnam, antiradiation missiles were in fact used both during the Arab-Israeli war and in the Falklands Campaign and played a foremost role during the course of the Sidra incidents in the spring of 1986. With a view to better understanding the threat represented by these arms, their main characteristics will be examined below and the ARMs currently in service will be reviewed.

CHARACTERISTICS OF AN ANTIRADIATION MISSILE

The distinguishing feature of an antiradiation missile is the sensor which is able to identify an electromagnetic

source operating in the frequency band of interest. These frequencies may be those typical of surveillance radars but also those found in target acquisition and tracking radars. The ideal sensor must therefore be able to explore a vast portion of the electromagnetic spectrum and, furthermore, must have sufficient sensitivity to permit the identification of a radar station before the weapon system linked to it is able to enter into action. Only recently has it been possible to satisfy this ensemble of requisites, with the setting up of large band receivers, of high sensitivity and of sufficiently contained dimensions that they may be installed into a missile. On the other hand, the early ARMs used interchangeable narrow band receivers, mounting the one considered most suitable for the electromagnetic scenario envisaged for the mission.

The availability of a sensor of high performance in terms of sensitivity and wavelength does not, however, suffice in providing a good antiradiation missile. In fact, the arms must be capable of discriminating among the transmissions surveyed, singling out hostile ones and identifying those which are potentially dangerous. The receiver must therefore be connected to a system for signal processing and most importantly to a data bank containing the parameters characteristic of the radars of interest. Among the parameters to be considered, in addition to frequency of transmission, are the impulse repetition period, its duration and the speed of antenna rotation. A comparison among the measured values of these parameters and the values contained in the data bank allows rapid identification of the station surveyed. At the same time, by identifying the direction of signal origin, the weapon is able to determine its position in terms of angular survey and of performing the calculations necessary to the solution of the guidance problem. This set of operations,



F 15 "Eagle" plane, armed with Sparrow radioguided missiles and with infrared guided Sidewinders.

instead of being effected from the missile receiver, may be carried out by an electronic surveillance system installed on board the vehicle, either airplane or helicopter, which then goes about activating the weapon by transferring the necessary information to it. In both cases, the analysis of the signals intercepted must take into account a priority scale which, in the event of several radar stations being identified, determines which one is to be attacked. The logic adopted is such that maximum priority is always attributed to the radars associated to weapon systems which may represent a direct and immediate threat.

The entire sequence of discovery operations, identification, location, definition of priorities, occurs automatically so that the reaction time is reduced to a minimum. Excluded from the

sequence is the decision on whether or not to launch the missile, a decision which is always left to the operator.

COUNTERMEASURES AND COUNTER-COUNTERMEASURES

The appearance of antiradar arms was immediately followed by the development of techniques and contrivances aimed at reducing their effectiveness and, according to a scheme familiar to the specialists of electronic warfare, these countermeasures were at once opposed by counter-countermeasures.

Traditional electronic countermeasures have little likelihood of success against an antiradiation missile of modern design. Once the frequencies of interest are identified, the receiver accurately tunes in them, preventing entrance to disturbing signals which could confuse the guidance system. Furthermore, recognition of the duration and period of repetition of the impulses transmitted by

the radar attacked allows only signals with the correct values of the parameters to be accepted, thus considerably reducing possibilities for deception.

In the past, a special countermeasure technique suggested by the characteristic of the ARMs was found to be more effective: that of using the attacked station's transmission to lead one to it. The simple trick of turning off the transmitter has on several occasions enabled to limit the effectiveness of an attack carried out with antiradiation missiles. This technique, which among other things allows the attacker to achieve a result anyway, since the radar is temporarily forced into silence, was largely used in South-East Asia. It was a question of a simple and immediate solution, which allowed to effectively counteract the USAF and US Navy *Shrike* missiles.

The ARMs of later generations incorporate special devices aimed at obviating a

sudden interruption of the guiding signal. These devices may be of two types: frequency memory and navigation memory. In the first case, as soon as the attacked radar station interrupts its transmission, the missile sensor embarks upon a searching phase, exploring in sequence a certain number of frequencies, chosen from among those memorized. Navigation memory, on the other hand, is constituted by an inertial, simple and low-cost navigation system, which is supplied with the estimated coordinates of the target before launch. This position information is updated by the missile during flight, by means of successive angle surveys. In the event that transmission is interrupted, the navigation system is thus able to take over control of the trajectory, guiding the missile towards the presumed target position. The precision of the weapon is nevertheless reduced, since the accuracy of the inertial guiding system is lower than that of the passive radar guiding system. This drawback may also be partially overcome by combining frequency memory and navigation memory: the second device is engaged in keeping the weapon on a correct path, while the radar sensor carries out a search on a programmed frequency, assuming once again the role of primary guiding system in the event that the search has a positive outcome. Against ARMs of this type the expedient of temporarily interrupting transmission loses much of its effectiveness, and it is necessary to adopt sophisticated techniques for the management of frequency and of transmission power in order to have some chance of success. A further possible defence lies in the use of "decoy" transmitters, not linked to any receiver and having the purpose of attracting the ARMs far from the real radar stations.

It is easy to envisage that in the near future the abilities of antiradiation missiles to autonomously guide themselves,



AMX aircraft, armed with Sidewinder air-to-air missiles.

plus their resistance to countermeasures, will be improved by integrating passive radar sensors with sensors operating in other regions of the electromagnetic spectrum. Of tremendous interest, in particular, is the integration with an infrared terminal guiding system able to identify "hot" spots, such as transmitters and feeders, or even to construct a thermal picture of the scene, then using target recognition algorithms. In this way, the task of the defence would be rendered extremely difficult, since it would also be necessary to adopt adequate countermeasures in the infrared region at the same time.

ANTIRADIATION MISSILES IN SERVICE

Development of this missile began in 1961 at the *Naval Weapon Centre* and production was started two years later by a consortium of industries led by Texas Instruments and by Sperry. The arm entered into service in 1961 and was

immediately employed in Vietnam by the *F 105-G* planes of the USAF and *EA 6-A* of the US NAVY. The *Shrike* is a missile of around three meters in length, with a diameter of 20 cm and a launch weight of almost 180 kg. The warhead, weighing over 60 kg, makes use of the combined effect of the explosion jolt and of the shell fragmentation. The sensor used is a crystal video receiver which allows coverage of relatively narrow frequency bands and this has brought about the development of at least 18 versions, diversified by the radar frequencies to which the receiver is tuned. The *Shrike*, which is accredited with a range of 15-20 miles, is the antiradiation missile which has accumulated the greatest mass of operational experience. Indeed, it was widely used in Vietnam where, although bringing to the fore restrictions linked to the technical solutions adopted, it contributed considerably to the drop in



Left.

U.S. Air Force F-4 aircraft, armed with AGM 45 Shrike, AGM 78 Standard and AGM 88-A HARM missiles.

Right.

Mirage 2000 armed with two A-A Magic 2 and two Super 530 D missiles.

For air-to-surface missions, the Mirage 2000 can be armed with laser-guided bombs and missiles, as well as with antiradar missiles.

American plane losses, from 160 in 1965 to the 40 of 1966. Later, during the Yom Kippur war, Shrike missiles were used by the Israeli air force to neutralize the SA-2 and SA-3 anti-aircraft missile stations. Nine years later, in the Falklands Campaign, RAF Vulcan bombers attempted on two occasions, 31 May and 3 June, to destroy the AN/TPS 43 F surveillance radar installed at the airport of Port Stanley. The outcome was not as hoped: after the first attack the radar began operating again after a few hours, while on the second attempt the operators, on noticing the approach of the attacking plane and having learned from previous experience, were quick to deactivate the apparatus in time. Having lost its guiding signal, the weapon missed the target, showing itself again to be vulnerable to this simple countermeasure. Although it can no longer be considered a recent weapon, the Shrike is still in service with several air forces and was also employed in the Sidra incidents in April 1986. On that occasion at least a dozen Shrike missiles were launched by the A7-E of the aircraft carrier *America* against the anti-aircraft defences of Tripoli and Benghazi, apparently with good results.

AGM-78 STANDARD ARM

The operational use of the Shrike highlighted its limits in terms of range, performance and dimensions of the warhead. In the autumn of 1966, General Dynamics Pomona Division was entrusted with the task of constructing a new antiradiation missile. The surface-to-air



missile (naval) RIM 66-A Standard missile, widely used by the western navies, was taken as a point of departure for the programme. The new antiradiation missile, named Standard ARM, was much larger than the Shrike, with a length of 4.50 m, a diameter of 34 cm and a launch weight of over 600 kg. In the test campaign of 1967, the Standard ARM demonstrated that it could reach a maximum range of 35 miles.

The AGM 78-A model was the first to be produced and was fitted with the same Texas Instrument sensor as the one used for the Shrike, but in later versions a new large-band receiver was employed and the missile was given the ability to make use of the data shown by an electronic surveillance system which could be fitted on the launching aircraft.

Production of the Standard ARM ceased in 1978, after around 700 of them had been built, but since then the existing missiles have been the object of various modernization programmes. The weapon is still in service with the USAF and the US NAVY.

AGM-88-A HARM

The antiradiation missile HARM, from the initials of the expression *High Speed Anti Radiation Missile*, is the result of a development programme started in 1972 which intended to combine the low cost and versatility of the Shrike with the sensitivity and range of the Standard ARM. Furthermore, the operational experience in South-East Asia suggested that the new missile should have been able not only to swiftly engage the target, but also to bring the attack to a close in the event that the transmission is interrupted. The HARM, produced by a consortium led by Texas Instrument, has a length of a little over 4 metres, a diameter of around 25 cm and a launch weight of 360 kg. The missile, which has a maximum range of 20-25 miles and uses a large-band sensor, has three different operating modes:

- Self-protection mode, in which it operates together with the launch-aircraft alarm radar receiver, receiving from it the data relative to a possible sudden threat, whose gravity is



Left, from top.

An AIM-132 ASRAAM. This missile is due to replace the Sidewinder.

Two AIM-9L Sidewinders.



AGM-122-A SIDEARM

The weight and dimensions of missiles like the *Shrike* and the *HARM* prevent their use by helicopters and also in the case of fixed wing aircraft they have a significant effect on the loading capability. The US Navy is engaged upon the development of an antiradiation missile of smaller dimensions and weight no greater than 100 kilograms. This weapon, known as AGM-122-A *Sidearm*, was built by modifying the semi-active guide version of the air-to-air *Sidewinder*, in the infrared-guided version. The *AIM-9-C Sidewinder*, with semi-active radar guide, was developed by Motorola at the beginning of the '60s to equip the *F 8 Crusader* plane. This missile, produced in about 1,000 specimens, was soon to be found unsatisfactory and was withdrawn from service. The transformation into *Sidearm* requires the replacement of the guiding system with a passive radar sensor. If the assessment under way has a positive outcome, the *Sidearm* will be fitted in attack helicopters and planes like the *AV-8B* of the Marine Corps. The characteristics of the missile lead one to believe that the primary operating mode, if not the only one, will be one of self-protection. The extremely small dimensions do in fact pose precise limitations in terms of range, warhead and signal processing ability.

assessed on the basis of a pre-established priority scale;

- Pre-planned mode, which provides for launch in the direction of a known station before its transmission has been received; when that occurs, the arm acquires the signals and attacks the radar station, otherwise destructs itself;

- Opportunity target mode, in which it assumes the functions of signal analyzer in order to identify unknown stations.

Frequency coverage of the *HARM* includes the X band in which the majority of air borne radars operate. One may thus hypothesize an air-to-air mode in the near future, for which it would be necessary, among other things, to adopt a different proximity fuse and an antenna of contained dimensions, so that it could be mounted on a Cardan frame in order to allow smoother acquisition and easier tracking of the target. The missile is the

object of development programmes aimed at improving their performance as regards radars which operate in agility of frequency or following transmission power-management techniques. In particular, according to some sources of the US Navy, in a new version the abilities of the guiding system will be augmented by adding to the passive radar sensor an infrared system of the image — construction type or a millimetric — wave passive sensor. The *AGM-88-A-HARM* entered into production in 1982 and after a lengthy and not always lucky test campaign was employed operationally in the spring of 1986. On March 24, two A7-E aircraft of the *Saratoga* aircraft carrier launched *HARM* missiles against an SA-5 missile station in the Gulf of Sidra. After the attack the site's radar remained silent for some time, but began operating again in the early

Right, from top.

A Luftwaffe IDS Tornado armed with four Kormoran missiles.

The Sea Chaparral naval system, equipped with a version of the Sidewinder AIM-9.

MARTEL AS 37

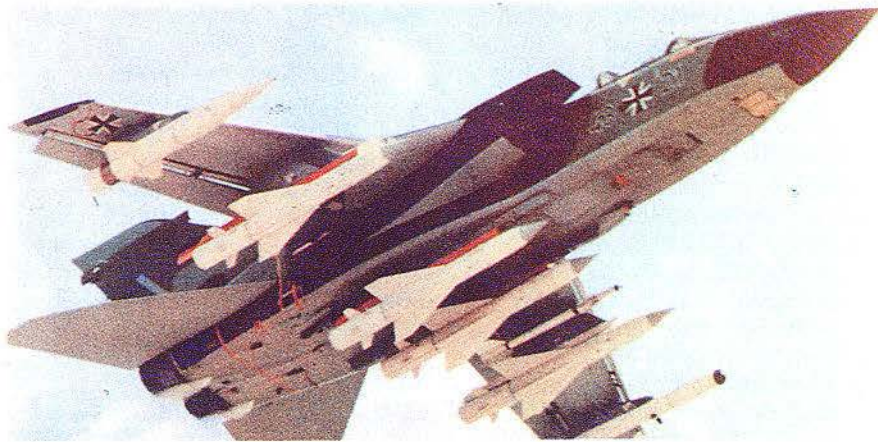
The *MARTEL* missile is the result of a joint Anglo-French programme begun in 1964, which represented one of the first examples of European cooperation in the field of arms. The *MARTEL* was built in two versions: antiradiation AS 37 and television-guided AS 168.

The AS 37 version, developed under the responsibility of the French firm Engine Matra, has a length of just over 4 metres and a diameter of 40 centimetres. The missile may be equipped with an antenna-receiver complex tuned in the operating frequency of the radar which has to be attacked. Should this not be known exactly, a different sensor is fitted and the *MARTEL* conducts a frequency search prior to launch. Once the transmission in question has been identified, the antenna carries out a sweep to determine the direction of origin. At this point, having gathered all necessary information, the missile can be launched.

Production of the *MARTEL* ended at the close of the '70s; the missile is still in service with the RAF and the Armée de l'Air.

ALARM

The *ALARM* missile (Air Launched Anti Radiation Missile) may be considered the first representative of a third generation of antiradiation missiles, whilst the second is represented by the *HARM* and the main exponent of the first is the *Shrike*. The weapon was developed by British Aerospace on request by the British Ministry of Defence. The *ALARM* uses a sensor made up



of four spiral antennae, housed in the nose, linked to a four-channel receiver of the heterodyne two-stage type and a signal processor. Information is not available on the wavelength of the system, but it is reasonable to think that it is such to include the operating frequency of the majority of

surveillance and tracking radars in service (2-18 GHz). The signals received are analyzed in terms of frequency, period of repetition and duration of impulse, level of power and direction of origin. This information is memorized and used both to identify the station and to pinpoint its

position by means of a series of regularly performed triangulations. In this way, the attack may be ended even in the event that the transmission is interrupted, in that the calculated position data are used by an self-piloting system employing a "strapdown" — type reference platform. The attack is concluded with a rapid dive on the target and the proximity fuse acts as a precision altimeter, regulating the altitude of explosion in relation to the characteristics of the radar attacked, in order to attain the maximum destructive effect in regard to its antenna systems. The *ALARM* has dimensions similar to those of the *HARM* and, like this missile, it has several operating modes:

- Direct Mode

This is the most simple operating mode, it provides for high speed direct attack against irradiating targets;

- Waiting Mode.

The missile, launched during the approach to an area defended by guided radar anti-aircraft systems, rises to 40,000 feet before starting a search phase. This takes place during a descent slowed by a parachute and can therefore last long enough to cover the transit of the plane. Once a hostile radar transmission is received, the missile unhooks the parachute and heads at high speed towards its source, using the thrust of a second stage of the rocket engine:

- Double Role Mode

This combination of the previous two envisages direct attack against a station of known position and, as an

alternative, a searching phase in the target area;

- Corridor Clearing Mode

The missile proceeds at a high altitude conducting a frequency search, then attacks any located hostile radar station. The simultaneous use of several missiles enables a corridor to be opened in the air defence system in front of the launching aircraft.

AS-5 KELT

This large missile (length 8.6 m, diameter 50 cm, wing span 4.6 m), with a launch weight of no less than 3,000 kg, figures in the inventory of the Soviet and the Egyptian air forces. The *Kelt*, whose existence has been known since 1968, is a missile designed for high altitude and high speed flight with a maximum range of 150 miles. The launch carrier is the *TU 16 Badger G* bomber. Alongside terminal radar guide and infrared versions, there exists one which is capable of guiding itself onto the sources of radar transmission.

During the Yom Kippur war, some of the 25 AS-5 missiles used by the Egyptians were certainly passive-radar guided and at least two succeeded in bypassing the Israeli defences, striking radar sites.

AS-6 KINGFISH

This is a Soviet missile of considerable dimensions which instead of a conventional war-head of around 1,000 kg, can carry a nuclear charge of 350 kilotons.

The weapon entered into

service in 1976 and can be used by *TU 16 Badger* and *TU 22 Backfire* planes. The *Kingfish* can follow a high altitude flight profile with terminal dive, or approach the target at very low altitude. A passive radar system is one of the possible choices for its guide system.

CONCLUSIONS

The effectiveness of the anti-aircraft systems in service today leads to an ever-increasing number of air forces equipping themselves with antiradiation missiles. These weapons can in fact integrate deception and jamming devices very well and constitute the natural complement to the self-defence systems of the attack aircraft. Employed en masse, after careful planning, they also constitute the most effective means for the suppression of the opponent's defence.

By exploiting the progress made in electronics, the more recently designed missiles have overcome the limitations of the ARMs which entered into service during the early '60s and, having more modes of operation at their disposal, are able to satisfy very diverse operational requirements.

It is easy to forecast that in the near future these weapons will also acquire the ability to efficiently engage air targets and that their performances will be improved by the combined use of other types of sensors. These realities and these prospects must be taken into account both by the radar designers and by the air defence operators.

Capt. Basilio Di Martino

ANTIRADIATION MISSILES



OPERATION «BRASSARD»

THE FRENCH LANDING AT ELBA IN
JUNE 1944



OPERATION "BRASSARD" THE FRENCH LANDING AT ELBA IN JUNE 1944

In February 1944 the front on the Italian peninsula was stabilized on the Garigliano river, while between the river itself and the city of Rome the beachhead at Anzio was under heavy counterattacks by the German forces. The Allied High Command decided to proceed to the conquest of the Island of Elba and entrusted the operation to the French forces.

The directives for the development of the operation explained in short the strategic reasons that made it necessary:

- to stop the shipping of supplies to the 14th German Army through the Piombino channel;
- to establish a base from which amphibious disturbing operations could be conducted on the Ligurian coast;
- to threaten the German rear lines, so that the adversary would have to engage forces which, as a consequence, could not be employed elsewhere.

Thus operation "Brassard" was born.

THE NATURAL ENVIRONMENT

Elba, the third largest Italian island and the largest in the Tuscan archipelago (map "A"), has a surface of 223 square kilometres. Located between the promontory of Piombino and Corsica, at a distance of 10 and 50 km respectively, it dominates the area between the middle and upper Tyrrhenian, and is important for the maritime communications between Corsica and the Continent. Together with its eight municipalities, it falls under the administration of the province of Leghorn. Its chief town, Portoferraio, has the only port suitable for relatively large ships. After the census of 1936, its population resulted to be 30,384.

The island, shaped like an irregular triangle with its basis facing the Italian peninsula and its vertex towards Corsica, represents the largest remnant of Miocene Tyrrhenia. Five inlets, the roadstead of Portoferraio and the gulf of Procchio on the northern side, and the gulfs of Stella, Locana and Campo on the south, narrow the island in two points to a minimum width of 3.5 km and divide it into three distinct orographic sectors.

The western one, formed by the complex of Monte Capanne (1,019 m) and its ramifications, is granodioritic and consists of metamorphic zones; the central one, formed by the two hilly alignments of Monte San Martino (370 m) and Monte

Orello (377 m) is of a porphyritic nature; the eastern sector is constituted by the schistose complex of Monte Calamita (413 m) and by the northern calcareous ridge.

From the main mountain groups, several spurs branch out and encircle the valleys, open to the sea, which represent the island's plains: S. Giovanni, Magazzini, Marciana, Campo, Lacona and Mola.

On the whole, it is a prevaillingly mountainous terrain, and this is reflected by the 118 kilometres of its coasts, two thirds of which are steep, and one third — where the short plains face the sea — low and sandy. Therefore there are few straight coastal stretches and the littoral is considerably indented and uneven, with numerous islets. Streams are insignificant.

THE INTELLIGENCE ACTIVITY

The Intelligence Office (Deuxieme Bureau) of the French First Corps (Gen. Martin) stationed in Corsica, which already in November 1943 had sent agents to the island, towards the end of February 1944 started a methodical search of information, in order to put together an accurate picture of the enemy situation. The assumption was that the enemy would defend the island and that their possible evacuation could be determined only by unfavourable events on the Peninsula. Moreover, this assumption was confirmed by a



visit of Marshal Kesselring and Gen. Von Mackensen (Commander of the 14th Army) to the defensive installations of the island, on April 18, 1944.

The insular character of the objective made the intelligence search very difficult. It was actually impossible to organize a system of radio

interceptions; the sources available, which were refugees and agents landed on the island (five groups altogether), gave a modest contribution in piecing together a picture of the German situation.

Furthermore, the agents, although they had been landed on the western side of the island, never made it over the Procchio-Campo isthmus, due to the German surveillance, and could only observe the area of interest from a distance. Considering therefore the scarce results obtained, recourse was made to the only sure and adequate source, i.e. air reconnaissance, both photographic and visual (USAAF), making, from April 23 to June 13, 1944, four photographic coverings and several partial surveys. The results of the investigative activity carried out between November 1943 and June 16, 1944 permitted to draw a map of the situation, from which it could be assumed that:

- the defence was mostly concentrated on the beaches, particularly in the bays of Procchio and Campo, and was almost nonexistent between them and in the interior;
- the artillery positioned on the promontories and on the main ridges was in a position to intervene on the beaches;
- predisposed destructions as well as active and passive obstacles complemented the barrage on the beaches, especially in the southern part of the island;
- the reserve units were scanty;
- the defender's force numbered about 1,500 men.

The picture turned out to be particularly accurate and was confirmed by the notes found in a German Command

after the landing. The only discrepancy worth mentioning was in the numerical force of the garrison, which turned out to be about 3,200.

THE OPPOSING FORCES

The French

To carry out the operation, the landing force no. 225 was formed, constituted by (1):

- 9th Colonial Infantry Division (Gen. Magnan) consisting of:
 - 13th Senegalese Infantry Regiment;
 - 4th Senegalese Infantry Regiment;
 - two 105 mm artillery bns;
 - two battalions of the 101st Engineer Regiment;
 - one antiaircraft artillery unit;
 - 2nd Moroccan Infantry Regiment (Lt. Col. de la Tour);
 - assault battalion (Maj. Gambiez);
 - "Commandos d'Afrique" battalion (Maj. Bouvet);
 - four British armed ships;
 - two gunboats;
 - British and US vehicles;
 - French naval units;
- for a total of approximately 12,000 men and 600 vehicles. Some American airplanes and two French fighter groups took also part in the operation.

The Germans

The island was defended by units of the 14th Army under the Command of Gen. Gall. The units were organized as follows:

- two infantry battalions for the defence of the coasts;
 - one infantry battalion;
 - one 149mm howitzer battalion (3 batteries);
 - one 88mm artillery battalion;
 - six Navy coastal batteries (one 76 mm, three 102 mm and two 155 mm);
 - four armed boats
- for a total of 3,200 men.

THE LANDING PLAN

The French landing plan envisaged the following tactical actions:

- initial neutralization of the batteries at Monte Poro, Punta Bardella, Eufola, Capo della Stella and of the Command Post of San Pietro in Campo, carried out by units of the assault battalion, which were due to land at H-3 hours (1 a.m. June 17) and, having completed the task by 3.45 a.m., start a disturbing action against the Command Post and the lines of communication;
- main landing, on the beach of Marina di Campo, of the 13th Infantry Regiment, the assault battalion, two artillery battalions, two Engineer battalions for the first echelon (4 a.m., June 17), and of the 4th Infantry Regiment and the 2nd Infantry Regiment for the second echelon, after the preparation fire from the ships armed with rocket launchers, starting at 3.45 a.m.;
- secondary landing, simultaneous with the main one, of the "Commandos d'Afrique" battalion in the area of Monte Tambone, in order to protect the right flank of the deployment;
- penetration as far as the northern coast, then turn to the east, towards Portoferraio, by the 13th Infantry Regiment and the 2nd Infantry Regiment;
- penetration towards the western coast, with occupation of Rio nell'Elba, Rio Marina and Porto Longone (now Porto Azzurro), by the 4th Infantry Regiment.

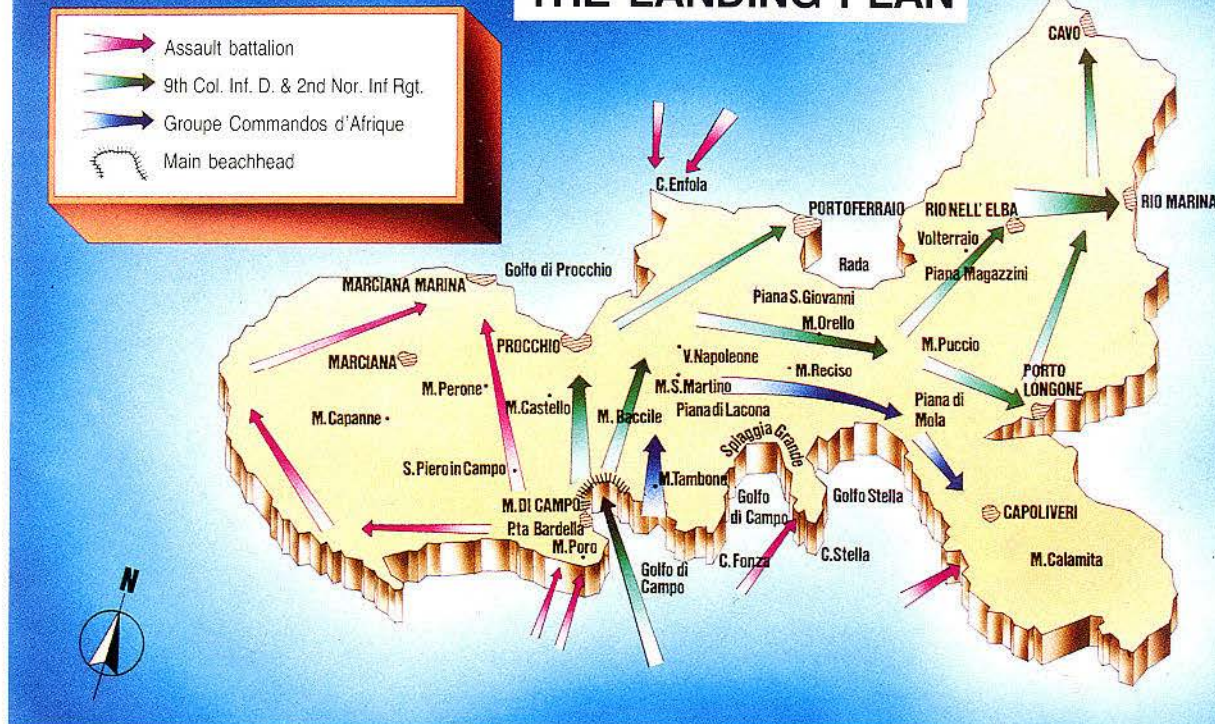
THE SURPRISE ELEMENT

Given the impossibility to conceal the concentration in Corsica of the troops destined to the landing, the French command was compelled to rely on the surprise element by keeping secret the date of the landing itself. To this end, in order to deceive the enemy, on June 6 and 12 two police operations were organized with the intent to isolate the presumable ports of embarkation, Portovecchio and Calvi. Traces of this activity were later found in the journal

On June 17, 1944, a commando of volunteers of the "Assault Battalion" makes a surprise landing on the Island of Elba, and is engaged in very hard fighting, contributing to the success of operation "Brassard".



THE LANDING PLAN



of the emplacement of Capo della Stella, in the records of the alert states issued by the German Command.

On June 16, the actual embarkation day, the French units, instead, headed towards the port of Bastia without taking any precaution.

THE EVENTS

The transport fleet, formed by about a hundred vessels, leaves from the area of Bastia on June 16 at 12 o'clock. The crossing proceeds on a calm sea and is disturbed, around midnight, by a clash, without consequence, with a German ship returning from the island of Pianosa.

At 1 a.m. the units of the assault battalion, tasked with the neutralization of the batteries and the Command post, disembark in six sites without any incident.

On the whole, the preventive action obtains a large success, albeit at the price of considerable French losses and later than it was foreseen; the battery on Monte Poro, in fact, is silenced only

at 5.30 a.m.

Besides the battery of Monte Poro, also those of Punta Bardella, Enfola and the Command Post of San Pietro in Campo are knocked out. The success is confirmed by the archives of the German Headquarters on the island, which record that no unit has been sighted and that the destruction of the batteries has facilitated the main landing.

At 3.45 a.m. the preparation fire from the ships starts and at 4 a.m. the first wave of the first echelon (I and II battalion of the 13th Infantry Regiment and units from the assault battalion) lands on the Marina di Campo beach, about two kilometres wide.

The units disembarked on the left succeed in overcoming the first and second defence line, while those engaged on the right — as a consequence of the errors made by the pilots of the landing craft, due to the violent and immediate German reaction — land on a minefield; as a consequence, a company of the 13th Infantry Regiment is completely destroyed and the remaining units stop under the fire of the defenders. The

landing craft, deeming that the disembarkment of the second wave and of the units of the 2nd echelon (third wave) would be impossible, reverse their course. At the same time, the "Commandos d'Afrique" land at the foot of Monte Tambone under a violent reaction fire.

The initial plan, due to the unfavourable events on the beach of Marina di Campo, must be adapted to the new situation.

The III Battalion of the 13th Infantry Regiment and the 2nd and 4th Infantry Regiment are landed in the wake of the "Commandos d'Afrique" on the beach of FONZA, which is small and inadequate to the needs. Thus the subsidiary operation becomes the main one. Nevertheless at 7 a.m. Monte Tambone is occupied and the progression continues towards San Martino (Commandos), Spiaggia Grande and Capo della Stella (4th Infantry Regiment). At 10 a.m., after liberation of the beach of Marina di Campo, the 1st battalion of the 13th Infantry Regiment takes Monte Bacile and the 2nd battalion of the same Regiment occupies Monte Castello. At 12 o'clock,

THE FRENCH ASSAULT BATTALION

On May 23, 1943, at Staoueli, Algeria, General Giraud constitutes the Bataillon de Choc, an élite corps formed by highly selected and top-trained volunteers.

This assault battalion, whose first Commander is Major Gambiez, consists of three combat companies and a service detachment; its task is to operate in depth into the enemy deployment, particularly in French territory, making attacks and sabotages in cooperation with the resistance organizations, as well as to gather useful information for the operations organized by the special services in Algiers.

Already in October 1943, squads and single elements were infiltrated into occupied France.

From September 12 to October 4, 1943, the assault battalion takes part in the liberation of Corsica, and during the winter performs various commando actions on the Italian coast. From June 17 to June 19, 1944, the battalion participates in the landing on the Island of Elba, and later, in August, takes part in the liberation of Grenoble.

Sixteen men commanded by Capt. Heriard-Dubreuil take part in the landing in Provence, side by side with the American paratroopers; then the battalion lands at Saint Tropez and, in September fights in Toulon. In October, the battalion is in the Haute Saône and, commanded by Capt. Lefort, is employed in the Vosges, at Belfort and in Northern Alsace.

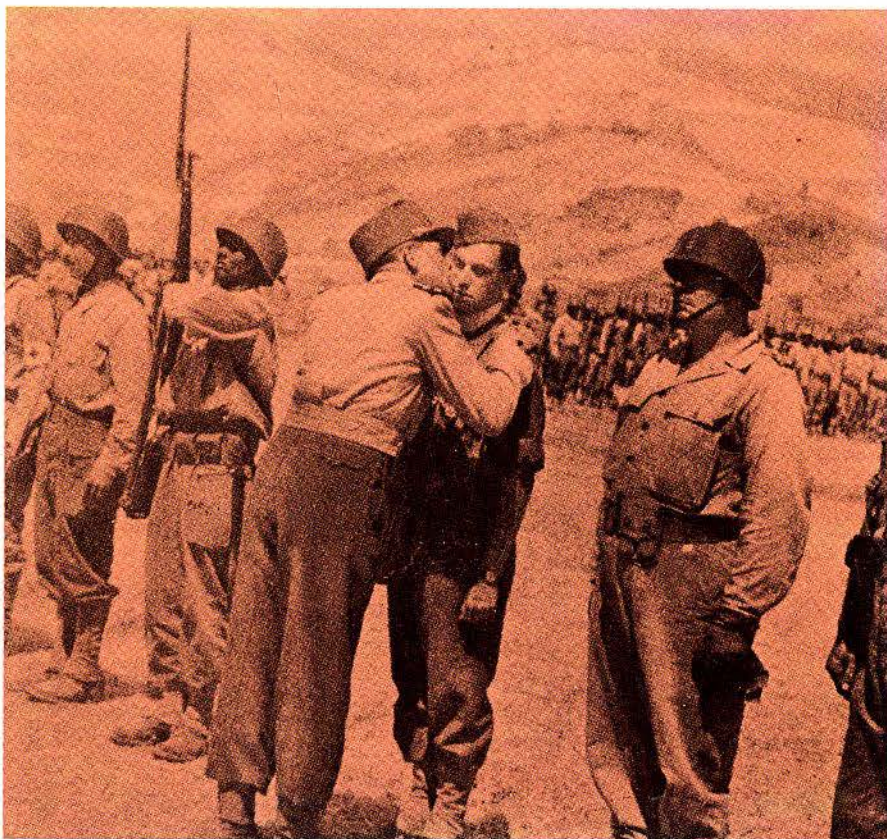
In January 1945 the unit is officially named "**1st Assault Battalion**" and, together with French commandos trained in Algeria and men of the **French Forces of the Interior (FFI)**, constitutes the **1st Assault Group**.

Employed in Alsace, Germany and Austria, the Assault Battalion reaches the Arlberg Pass.

The scarcity of effectives and equipment, together with the evolution of the conflict itself, diverted the battalion from its original tasks: suffice it to mention that, after the landing in Provence, the battalion was employed as assault infantry.

In this rôle, the lack of heavy armament and specific training was compensated by the indomitable courage of the men.

General de Lattre hugs Lt. Jacobsen, after awarding him a decoration. Jacobsen, nicknamed "the Dane", had taken part in the landing of June 17.



FERNAND GAMBIEZ
the first Commander
of the "Assault Battalion"

Fernand Gambiez, born in 1903 in a modest family, attends the Saint Cyr Military School and from 1925 to 1927 serves with the **17e Bataillon Chasseurs Alpins**.

Until 1932 he is stationed in Morocco with the **2e Régiment Etranger d'Infanterie (REI)** for operations on the Algerian-Moroccan border.

Promoted to Lieutenant, he is wounded and awarded the Legion d'Honneur. In 1932, Lt. Gambiez is transferred to the **51e Régiment d'Infanterie** and, as Captain, attends the War College and the Military School of the **20e Chasseurs Alpins**.

In 1940, he takes part in the campaign of France with the **30e Bataillon Chasseurs**.

After the defeat, he is assigned to the General Staff of the Vichy Army and remains there until the end of 1942, when he crosses the Spanish border.

Until May of the following year, he is interned in Barcelona and then reaches North Africa, where he joins Gen. Giraud. As a Major, he assumes command of the **Assault Battalion**, which he leads in the liberation of Corsica (1943) and in the landing at Elba (June 1944).

One month later he constitutes the French Commandos in Algeria and in November, together with the **Assault Battalion** he establishes the **Assault Brigade**, which will be employed in the Vosges, in Alsace, in Germany and in Austria. In 1945, promoted to Colonel, Gambiez is assigned to the sector in charge of the general inspection of the Armed Forces and, subsequently, is appointed Director of the School of Saint Maixent, where he remains until 1948.



once the beach is cleared, the first vehicles and artillery are unloaded. The road to Portoferraio is open. At 5 p.m. the II Battalion of the 13th Infantry Regiment occupies Procchio, the assault battalion takes Monte Perrone and Marciana, while the Commandos battalion takes Monte Puccio, thus controlling the ridge that cuts the island in two parts. The western area of the island therefore is liberated on the evening of June 17. The same evening, a tank company is landed and the logistic flow between Bastia and Marina di Campo is activated. The losses of the 13th Infantry Regiment and the "Commandos d'Afrique" have been heavy.

On June 18, at daybreak, the French units, whose task is made easier by the withdrawal of the German forces, are again on the move. The II battalion of the 13th Infantry Regiment decimated by the action of the day before, stops near Procchio and sends scouting patrols eastwards. The I Battalion of the 4th Infantry Regiment takes possession of Villa Napoleone, followed by the I Battalion of the 13th Regiment, transferred to the 2nd echelon, while the III Battalion of the 13th Regiment, inserted between them, occupies Portoferraio and at 12 o'clock concludes the mopping up. On its turn, the 4th Infantry Regiment turns east and, after heavy fighting, conquers Monte Reciso and Monte Orello, reaches Monte Puccio and occupies, through Volterraio, Rio nell'Elba.

The 2nd Infantry Regiment, following the coastal plains of Lacona and Mola, reaches Capoliveri and the heights that surround Porto Longone, together with the "Commandos d'Afrique" and units of the assault battalion. The resistance of the German garrison is obstinate, and only on June 19 does the stronghold fall, under the pressure of the French units. The island is conquered. The French have lost about 500 men, the Germans around 600, and 2,500 are taken prisoners.

CONCLUSIONS

The study of the operations carried out by the French forces for the conquest of the island has evidenced the following aspects, which could be seen as teaching elements:

- necessity of a preventive and capillary informative research, in order to obtain the widest knowledge of the enemy defensive situation;
- impossibility, for amphibious operations of relatively large proportions, to conceal the concentration of forces and the size of the units; possibility to exploit the surprise factor as regards the date of the landing;
- need to envisage alternative landing areas, to avoid delays in the operations in case the main landing zone turns out to be unemployable by the subsequent waves;
- convenience for the defender to intervene rapidly and timely with the reserves, to prevent the forces disembarked from consolidating their position and strengthening the beachhead;
- necessity, by the defensive side, to quickly locate the main landing zone, in order to prevent coups de main and diverting secondary landings from scattering and fractioning the reaction of the mobile forces.

Moreover, it is important to underline that operations of this type seem to always require extreme flexibility of planning, due to the different and numerous difficulties that could come up and the unforeseeable mishaps that can decisively affect the favourable outcome of the operations.

Finally, interesting prospects are offered by the present availability of helicopter-transported forces, the employment of which, thanks to their extreme mobility, permits to accomplish manoeuvres of vertical outflanking and prevents the adversary from detecting beforehand the points where the effort is going to be applied.

Ghino Andreani

NOTE

(1) The units had been located in Corsica since 1944, after the liberation of the island, but were reestablished in French West Africa and reorganized in Algeria, with French and colonial personnel stationed in Africa and personnel escaped from occupied France.

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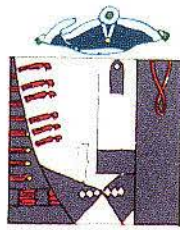


Maj. Gen. Ghino Andreani has attended the Military Academy, the Application School and the War College. Assigned to the Tank Corps, he has been commander of tank units of the "Ariete" Armoured Division, as well as a General Staff officer at the 3rd Corps Hqs. and at the Army General Staff. Gen. Andreani has also been Commander of the 7th Tank Battalion, "Ariete" Armoured Division, and Deputy Commander, "Curtatone" Armoured Brigade. He has attended various courses at the German Armoured Troops School and taken part in bilateral exchanges with the French Army and the Turkish Army. Gen. Andreani has held the office of Chief, Personnel Employment Office, Army General Staff, and has been Commander of the "Manin" Armoured Brigade. Since May 1986, he has been Chief of the 3rd Division of the Army General Staff.

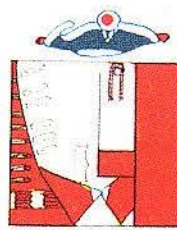
UNGARISCHE INFANTERIE REGIMENTER 1762.



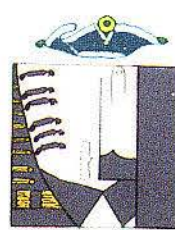
Erzh. Ferdinand.



Gyulai.



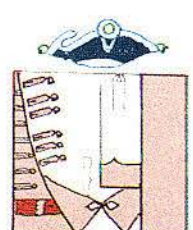
Preysach.



Nicol. Eszterházy.

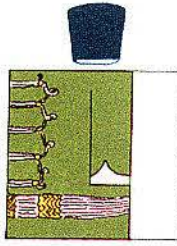


Josef Eszterházy.



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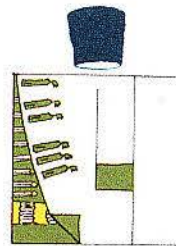
CROATEN UND GRENZ REGIMENTER 1762.



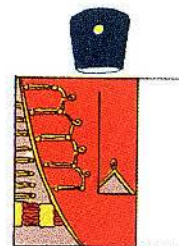
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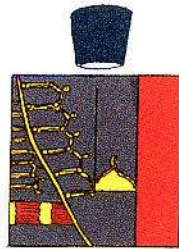
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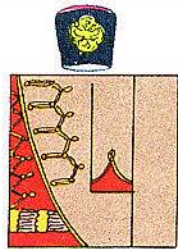
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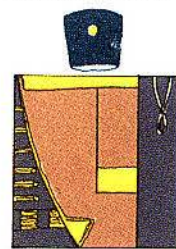
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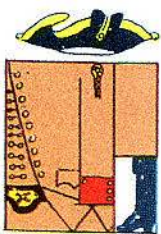


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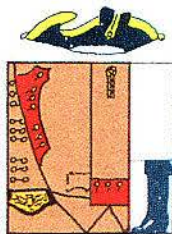


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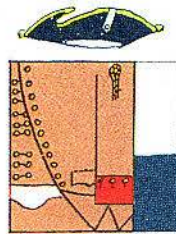
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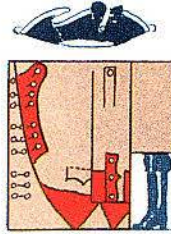
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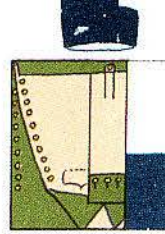
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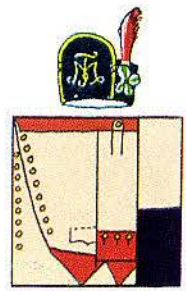
Artillerie Fusiliere.



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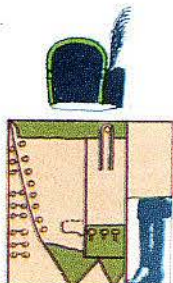


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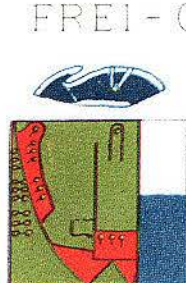


Sappeurs.

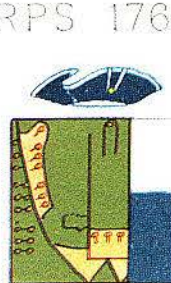
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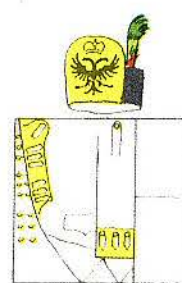
Corps de Chasseurs.



Bataill. Louvain.

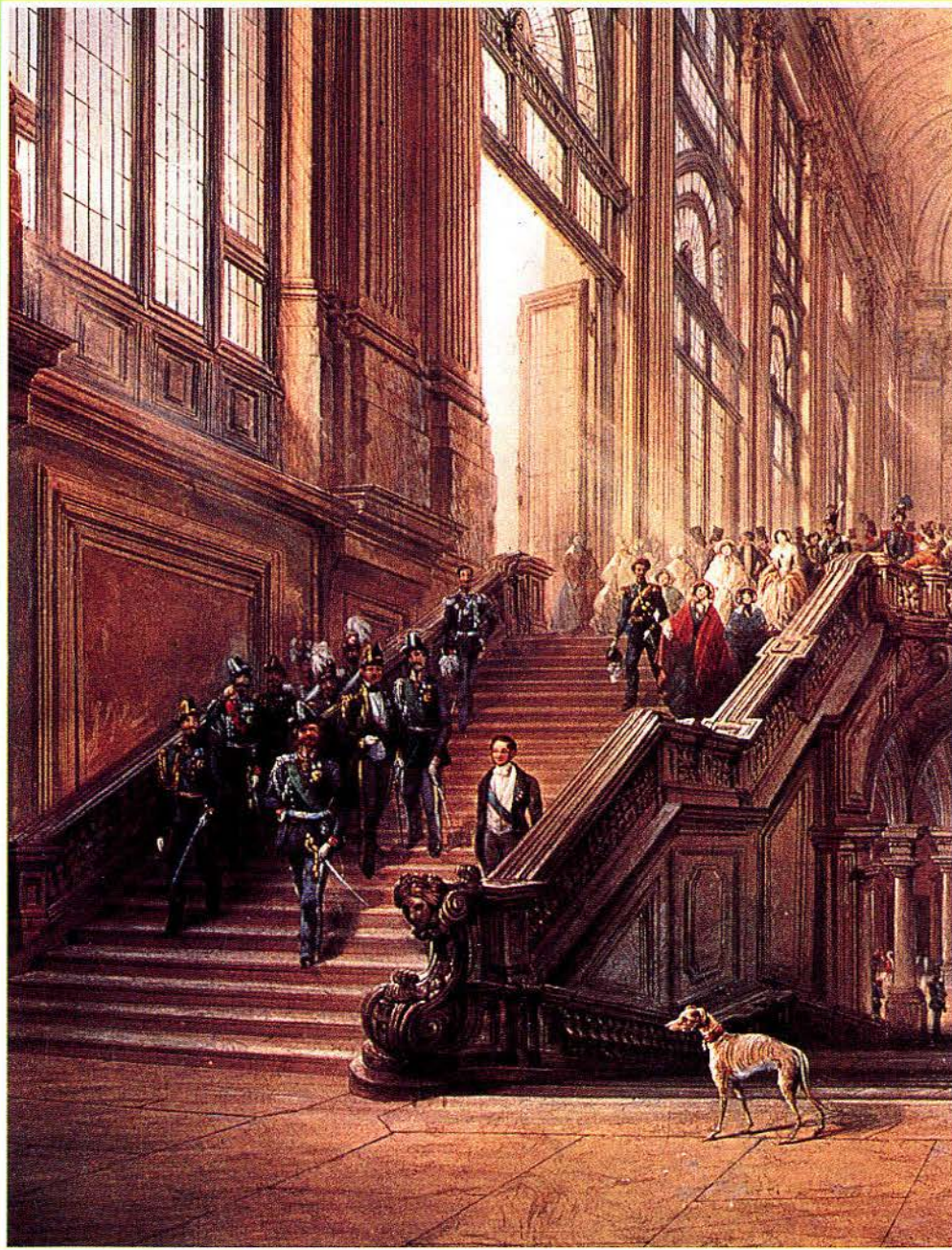


Volont. de Gen. Bock.



*Comp. nouvel. mit. eroge.
de Gen. Lascey.*

TOWARDS THE UNITY OF ITALY



Carlo Bossoli, Re Vittorio Emanuele II, accompanied by Count Camillo di Cavour and the Court, descends the great staircase of Palazzo Madama after the opening of the V Subalpine Parliament (1853), tempera on paper, cm 71 x 56, Turin, Gallery of Modern Art

The subject is a vast one. In fact, it is practically impossible to delineate briefly the irregular outline, from the first War of Independence to the Unity of Italy, which makes up the pictorial illustration of the various events of the Risorgimento, the portraits of the protagonists, the intimate representation of facts seen in the light of daily life and of trepid hope.

There is no Gallery of Modern art, no civic picture-gallery, which does not retain, and show to great advantage in specific spaces, that great patrimony of visual culture and ideals which the major artists of the Italian nineteenth century, and also minor personages of lesser technical and expressive ability, represented in their canvasses and tables.

The Museums of the Risorgimento by themselves offer hundreds of pictures of very different kinds and qualitative levels. In this sense, to make a drastic selection becomes a necessity, in order to stop our attention to the significant samples of historico-artistic work which is an integrated part of our memory of sacrifice of blood and a need for civic acquisitions that cannot be disregarded. Also from this substantial skimming of the works inspired by the history of the central events of the Risorgimento, it is clear that art has not only performed a celebrative function, not merely complied with narrative and descriptive solicitations, but — as Palma Bucarelli affirms in the presentation cards of the catalogue of the Galleria Nazionale d'Arte Moderna of Rome — that the yearning after political freedom has been interwoven with the tendencies to pictorial renewal. There follows a just consideration, according to which the Risorgimento was no less a cultural movement than a political one. The best artists, in their aspirations as combatants and patriots, placed their ideological sentiments,



aimed at ridding Italy of foreign rule and to build a united and independent country, side by side with the need for a renewal of pictorial research, which would be free from the curbing rules of the cold academic approach.

In general we could say that the historical painting of the Risorgimento provided remarkable hints for the evolution of a style of representation which — though it remained within the main features of a purely realistic taste — broke away from the fetters of the academic conformism of allegory, just because it was openly fighting against the contemporary

Antonio Pagliano, Portrait of Giuseppe Garibaldi, Milan, Museo del Risorgimento.

political conformism.

It is beyond doubt that, in the general situation of the articulate and progressive process towards freedom, the Garibaldian epic has played a fundamental role. The crushing impact of the event, the climate of confidence and expectation, the charisma of the heroic personality, the vitality of the strategist, the inspiring force he exerted upon the most disparate members of society, the enthusing results on the military level, have been urging artists of various cultural origins and



social and ideological extraction to the representation — often free from encomiastic rituals — of the whole creative journey of Garibaldi towards the Unity of Italy.

Even a painter like Giacinto Gigante, one of the main Neapolitan artists of the Scuola di Posillipo, a famous “vedutista”, whose tendency to scenographical schematization surpassed any need for documentation, could not escape the attraction of the myth of Garibaldi. Gigante — as is known — had been long contended for — such was his fame and mastery — by the Bourbon Parthenopean nobility and went habitually to the Court of Francis II, often accompanying the sovereigns in their stays at Gaeta. After the Unity of Italy “bon gré mal gré”, while being much afraid of falling a victim to the Garibaldians, he planned in 1861 a monumental composition representing the *Garibaldi entering La Maddalena bridge*. This work remained only as a plan, but there is a splendid watercolour sketch of it, vibrating with light and colours, in the National Museum of San Martino. In it the painter interprets the Neapolitan landscape in an openly lyric way and lets Garibaldi’s carriage triumphantly advance among a whirling waving of tricolour flags. It is the 7th of September, 1860. The same event — but pictorially aimed at reaching a result of illusive evidence — has been put on



canvas by Antonio Licata, whose undoubtedly minor artistic gifts have been balanced by patriotic enthusiasm to such an extent that the representation turns out to be made fussy by an excess of realistic notations. One thing is certain: here, more than in the preceding picture,

Top.
Giacinto Gigante, Arrival of Garibaldi in Napoli, Naples, National Museum of San Martino.

Above
Daniele Ranzoni, Portrait of the Garibaldian Major Filippo Erba (1872), Oil on canvas, cm. 71.5 x 57.5, Milan, private collection.



the figure of the Hero of Two Worlds, "the man who represents the most beautiful ideal of the Italian nation" (Carducci), plays, at the centre of the composition, the role of the "condottiero" who, above all, fascinates the masses and the humble. Leaving out this celebrative and monumental vision of the heroic figure — of which there is obviously an immense iconography — it seems to be more proper to call our attention to those attributes of Garibaldi's personality which emerge also from the portraits from life: pride, loyalty, introversion, humanity. Among this kind of pictures we choose those painted by Eleuterio Pagliano and Vincenzo Cabianca, though they greatly differ from each other in their pictorial bases

and quality. The *Giuseppe Garibaldi* by Pagliano, painted the 15th of December, 1859, is a small-sized oil painting portraying the General wearing the Sardinian Army uniform, half bust and in a three quarter sitting. It perfectly suits the description of Garibaldi by Giuseppe Guerzoni: "knight errant of justice and freedom, simple, upright, always ready to bend every thought, every personal propensity to the ideal he had bound himself to since his early youth. He had no other laws but those of his conscience". Really, here we are not confronted by a mannered portrait, but by a strong introspective penetration, very emotional, which offers the spectator a temperament of great intensity and expressive weight.

Also Vincenzo Cabianca succeeds in giving us these same qualities, though by means of the technique of the Florentine impressionists (Macchiaioli). The democratic faith of Cabianca, proved by his adventurous biography of conspirator, especially in his youth, leads the artist to conceiving the painting *Garibaldi at Caprera* (circa 1880) as a sign of homage and gratitude towards the man who is by now tired and weighted down by disillusion and embitterment. Here Garibaldi is coming to the end of his earthly existence; he is staring at the ground, absorbed; the foot, wounded at Aspromonte, and the crutch, are well in evidence. Although there is no apotheosis, the wise choice of the pose, still heroic even in



the absolute informality, contributes to a representation of the character caught in an atmosphere of deep meditation. The art of the portrait in the historical Garibaldian painting is studded with other masterly examples, also related to minor personalities. It is the case of the *Portrait of the Garibaldian Major Filippo Erba* painted by Daniele Ranzoni circa 1870. This work, which shows traces of the influence of Tranquillo Cremona, of whom Ranzoni was a friend, tends towards a search for atmosphere rather than facial features, melting the image in the light of a chromatic fading, and becomes a painting of feelings. The austere countenance of the person in the portrait, the look full of melancholy, the twilight tonality of the red shirt, the

weak glitter of the decoration, combine to cause the picture to be regarded as one of the most refined of its kind.

We could go on for a long time speaking about Garibaldi's iconography and Garibaldian portraits, citing, for example, the paintings by Filippo Palizzi or Francesco Saverio Altamura. The subject of this brief notation, however, calls for a pause in order to seek for those examples which are more closely linked to the events of the Risorgimento, both relevant to the enterprises of the Hero of Two Worlds and to the chief military vicissitudes of the second War of Independence. After 1860, the exploits of Garibaldi's juvenile years became a myth, as is witnessed by one of the most renowned paintings by Pietro Bouvier,

Garibaldi and Major Leggiere carry dying Anita during their flight. Painted in 1864, this picture is the most famous and evocative translation of an episode which was deeply loved by the popular literature and the hagiography of the Garibaldian epic.

Being a pupil of Hayez', Bouvier was essentially a drawing-room painter, with a refined mark and prevailing light

Facing page.

Vincenzo Cabianca, *Garibaldi at Caprera* (1870-80). Oil on canvas, cm. 72 x 87.5, Florence, Gallery of Modern Art of Palazzo Pitti.

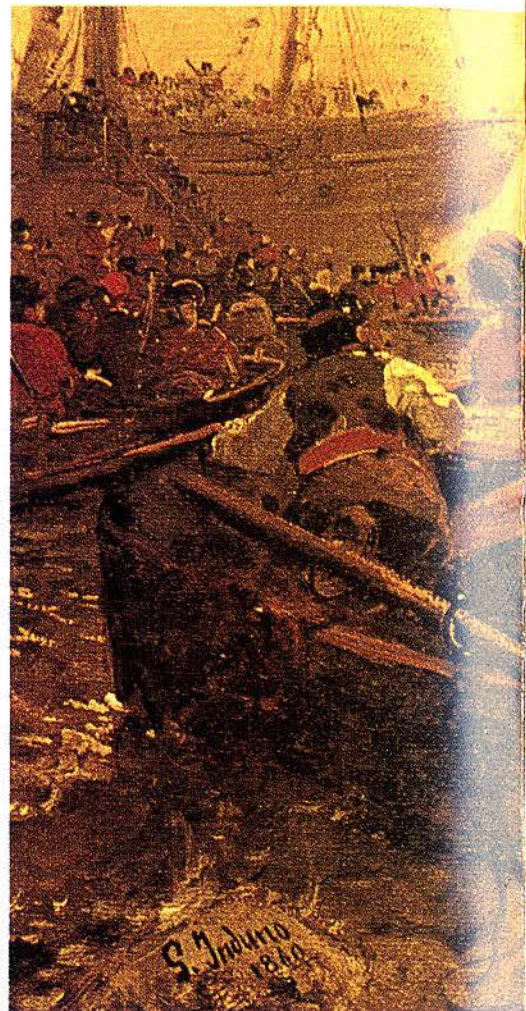
Above.

Pietro Bouvier, *Garibaldi and Major Leggiere carry dying Anita during their flight* (1864), Oil on canvas, cm. 146 x 108, Milan, Museo del Risorgimento.

colours. In this historical picture, the painting tends towards strong chiaroscuro effects and plays of light in a way to suggest the artist's emotional participation in the illustrated fact which represents the hero in the moment of utmost grief. The structure of the painting is dramatic, though formally classical in its general lines. As is noted, the picture has inspired some tercets of *Rapsodia Garibaldina*, composed by Giovanni Marradi in 1899. In these tercets, Garibaldi, together with Anita and Leggiero, is caught in the tension of flight, hunted down in the maize field of the Comacchio marsh, while he desperately tries to help his sick and extremely exhausted wife. Continuing to deal with the feats of Garibaldi, there are many pictures, also famous, which depict the whole course of the "Mille" enterprise. Let's quote some of them: *Victor Emmanuel II and Garibaldi meet at the Teano Bridge*, described with topographic scruple and not without emotion by the Piedmontese Carlo Ademollo; *Garibaldi at Capua*, an episode of the battle of Volturno represented by Fattori, belonging to the first period of his patriotic painting; *The "Mille" depart from Quarto*, magnificently fixed in the crepuscular image by Gerolamo Induno.

The number of painting and lithographies representing the main phases of the battles of the second War of Independence is also great. Among these, *The battle of Magenta*, which was depicted, besides Fattori, by Luigi Bellangée and Gerolamo Induno, and *The 24th of June at San Martino*, a vigorous illustration by Michele Cammarano. Being a true follower of the realism of the Posillipo school and of Palizzi's naturalism, Cammarano, with a strong narrative and dramatic vein, but also with a substantially rhetoric inspiration, realized this grand canvas in order to illustrate a historico-patriotic event with a particular

realistic taste and not without some strong popular hints. The painting is rich in beautiful details, which interact with the impetuous movement of the whole composition, whose background is a landscape which is as glittering as the battle celebrated in the painting. No event of the Risorgimento has been neglected by the hand of the artists, who, through their images, enable us to reconstruct hour by hour all the facts of Italian history of the whole 1850's. Naturally, among these, there is no lack of triumphal moments such as: *Victor Emmanuel II leaving Palazzo Madama after the opening of the Subalpine Parliament*, a tempera by Carlo Bossoli, in which the protagonists of the event are scattered in the wonderful perspective of the great staircase by Javarra, or as *Victor Emmanuel II and Napoleon III in Milan*, a sketch by Giuseppe Bertini in which the triumphal entrance of the 8th June 1859 is realized with happy improvisation but still with respect to the chronicle of the event. Lastly, let's have a glance at those representations of history which are looked upon with the intimate eye of everyday life: in these, history is mixed with emotions and trepid waitings in home were the echoes of battles and heroisms are filtered in images of the ideals so craved for and now almost within reach. This reference is openly addressed to the paintings of the "macchiaioli" and is mostly related to: *The first Italian flag carried to Florence* by Francesco Saverio Altamura; *26th April 1859* and women sewing red shirts by Odoardo Borrani; *The masked boys* by Adriano Cecioni. The painting by Altamura shows clear traces of the contacts the artist from Foggia had with the "Macchiaioli". In it, the theme of the Risorgimento can only be detected in the central figure of the young man bearing the great Italian flag



and in the sunny background of the landscape of San Martino al Monte, which illuminates the close link existing between past and present. The painting refers to the popular uprising in Florence, which obliged Leopold II to leave the city and to decree the end of the House of Lorraine's Grand Duchy (27 April 1859). Altamura, a fervid patriot, gives us an inward and symbolic interpretation of the event, quite analogous to the one given by Odoardo Borrani, who, in his very famous *26th April 1859* shows a serene interior with a young woman

Above.

Gerolamo Induno, *The "Mille" depart from Quarto*.

Right.

Giuseppe Bertini, *Victor Emmanuel II and Napoleon III in Milan (1859)*, sketch, Oil on canvas, cm. 39 x 69, Milan, Museo del Risorgimento.





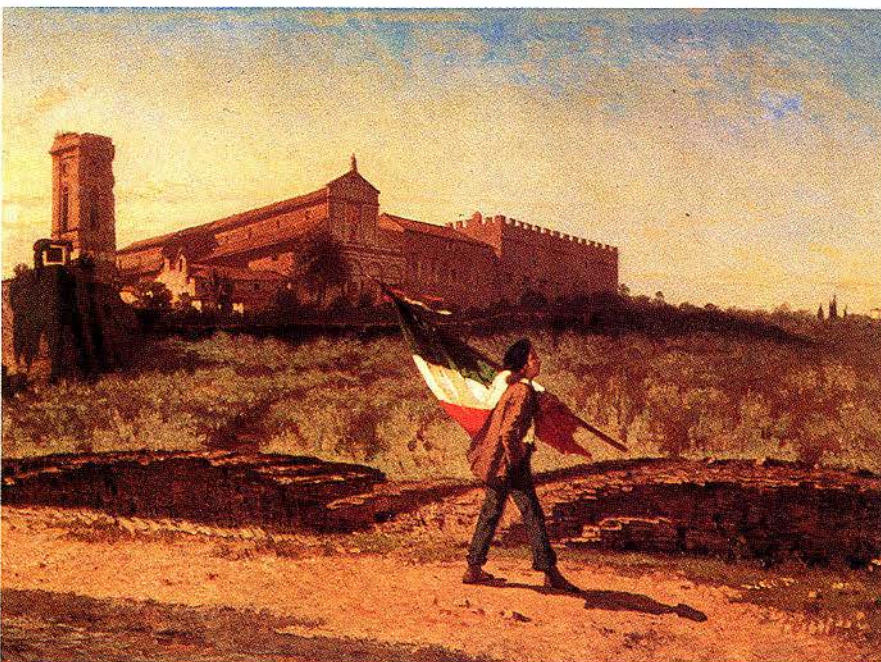
Left, from top.

Odoardo Borrani, *Women sewing red shirts* (1863), Oil on canvas, cm. 66 x 54, Florence.

Francesco Saverio Altamura, *The first Italian flag carried to Florence in 1859* (1859); Oil on canvas, cm. 51 x 75, Turin, Museo Nazionale del Risorgimento Italiano.

sewing the Italian flag. With a daring image, we could say that, from the time-space point of view, Borrani's interior precedes Altamura's exterior stance, and this woman represents an ideal mother of the young man on his way to Florence. With *Women sewing red shirts* (1863) Borrani takes up and continues with the happy intuition of the preceding picture. This masterpiece, one of the artists' best and most poetic works, is imbued and animated by ethical and sentimental contents and constitutes an irreplaceable reference point to understand how the "macchiaioli" painting interprets the climate of fervour and democratic hopes of the Risorgimento. *Women sewing red shirts* is a painting of rare cordiality and delicacy, where civil aspirations are closely bound to the absorbed intimacy of the domestic walls and to the silent devotion of the women, who are participating in the need for an improvement of the social and political conditions in a renewed Italy.

Finally, as if the scene was happening in a room adjoining that where the women are intent on sewing the red shirts, it is pleasant to conclude our "excursus" with the wonderful ambience sketch *The masked boys*, by Adriano Cecioni, in which the children, who are playing soldiers, are themselves, in their way, protagonists, not at all irreverent, of a history which the "real Country" was living with a sense of optimism and hope.



Pier Marco De Santi



GE9/AC 5K 5 KW GENERATOR

The Army General Staff, in view of the positive results of technical and employment tests, has recently homologated a 5 KW generator.

The unit, developed within a specific bid among Italian industries, will feed the SRT-478 medium-power vehicular radio-stations, now entering service, to replace the old American generators which have become unreliable.

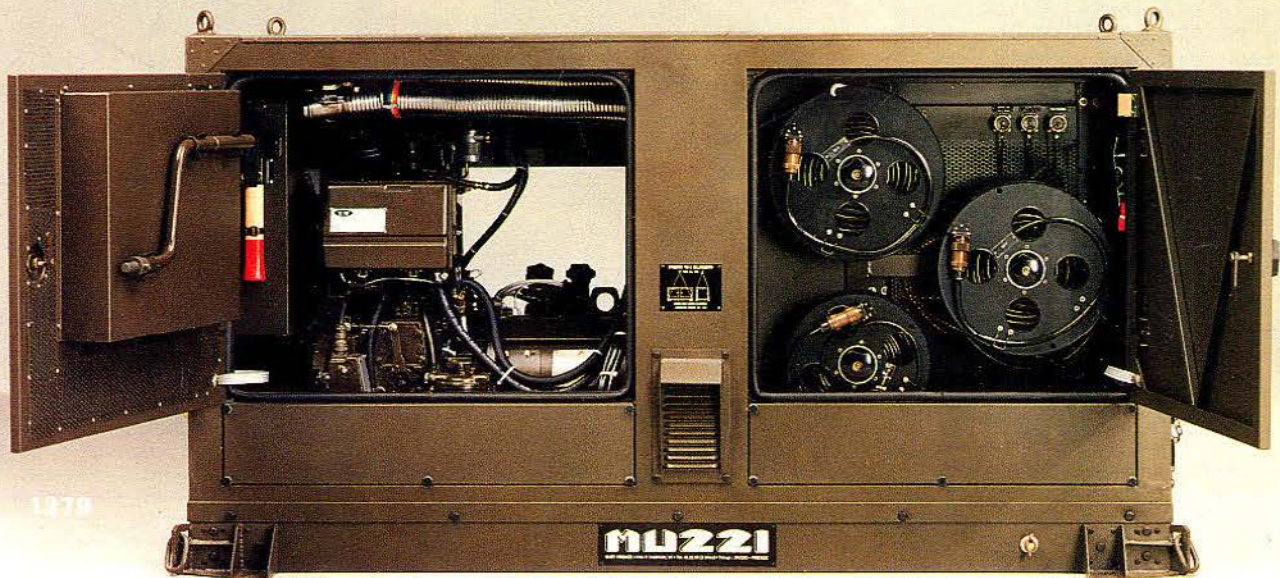
The GE9/AC 5K will also be a reference point in the programme of standardization of power units, recently started by the Army General Staff, since it can be employed to meet the requirements of many Army materials (lighting units, maintenance posts, Command Posts, etc.). The generator, mounted on a 0.5t two-wheel trailer, has been designed to meet the military specifications required by NATO standards.

The GE9/AC 5K is a highly reliable field unit, realized with very advanced

technologies, and can produce electric power for general use as well as for telecommunication sets and battery recharging.

SPECIFICATIONS

Possibility of employment:	up to 2,000m asl
Temperature limits:	—20°C to 55°C
Possibility of transport:	railroad, airplane, ship, helicopter
Duration:	approx 6 hours
Possibility of charging external batteries:	24V DC 20A
Composition:	• air-cooled 12HP diesel engine • 220V, 50Hz, 5KW monophasic synchronous alternator, with brushless excitation controlled by an automatic electronic regulator • 45A/h, 24V starting batteries • general control panel • frame • cabinet • accessories





'90 COMBAT VEHICLES

The Swedish defence industry has designed a new series of light armoured vehicles called "'90 combat vehicles". They will have a basic hull, suitable for tracked armoured vehicles, antiaircraft and recovery vehicles, and will be armed with the new antitank BILL missiles. The project has excellent possibilities of development, due both to the protection of the vehicles and the effectiveness of their main armament. The "'90s" are in fact the first combat vehicles protected against infrared weapons, and this gives them the highest security coefficient.

The first model can be adapted to 5 basic hulls, with a turret for a 40mm automatic cannon. The other versions will be produced by the end of 1993.

The basic vehicle is called "G armoured tracked vehicle", weighs less than 20t and is armed with an automatic cannon which can be employed against ground and air targets, as well as in combat against similar vehicles.



NEW IMAGE-INTENSIFIER BINOCULARS

Surveillance and identification of potential targets are of crucial importance for military activities. A precision team of the British aerospace industry has recently completed the development of image-intensifier hand binoculars, with stabilized sight. The new scope has made possible to overcome the numerous problems connected with night vision and with the observation from helicopters, ships, motor vehicles and other self-propelled platforms.

The binoculars use the well established technology of the "Steadyscope" stabilizing lens, which has been successfully employed in more than 40 countries.

The magnification in standard optics is 12.5 x 10, or x 14 with spares. The scope, weighing 2.3kg, has a 40mm lens with a field of view of 5°. The eyepiece adjustment is -4 to +4 dioptres.

The correct sighting is established by the control mirrors, which rotate on two axes; their rotation is guided by a small DC motor, driven by two dry batteries, with an operational duration of 10 hours. The stabilized mirror incorporates a guiding mechanism which follows the movements of the target, in order to take the exact aim.





Giovanni Spadolini:

"The Idea of Europe" between Enlightenment and Romanticism,
Published by "Le Monnier", 294 pages with 408 plates, 40,000 Lire.

SPADOLINI

L'IDEA D'EUROPA

fra illuminismo e romanticismo

La stagione dell' "Antologia" di Viesseux



The idea of Europe between Enlightenment and Romanticism. Spadolini's latest book reconstructs the birth of the idea of Europe through the pages of Viesseux's *Antologia*, in which the legacy of the Enlightenment and the Romantic experience meet.

It is both a study of the problems and a selection of texts: a foretaste of it was published in the same series under the title *Fra Viesseux e Ricasoli*, and others will be following. The book's main purpose is to rediscover the roots of a cultural Europeanism, which runs throughout the book without ever manifesting itself in a declaratory, grandiloquent or ostentatious manner.

The cultural Europeanism of the *Antologia* is in the philosophy of Viesseux, in his system for handling relations with the

whole of Europe. It was in the technique of the culture industry based essentially on Swiss or French *schemata* through his avant-garde cultural enterprise in Florence: initially the "Gabinetto" for reading and conversation, then the magazine, then the publication of periodicals in various monographic disciplines.

It is the indirect, restrained Europeanism of the "society of minds" of which Voltaire had an insight in the second half of the eighteenth century. That idea of the literary Republic which, in the period between the Enlightenment and Romanticism — symbolized by Giuseppe Mazzini — became the political Republic, or rather the plan for a republican confederation of Europe.

The idea of Italy stemmed from its language and its culture, and started with the rediscovery of Dante. In the same way, the idea of Europe stemmed from the insight of a Europe seen as a cultural unity. It was no coincidence that Giuseppe Mazzini began his controversial collaboration with the Palazzo Buondelmonti magazine with an article on "Dante's love of his fatherland" which was rejected because of the fear that the Grand Duchy's censor might be upset by it.

"Dante's love of his fatherland" was only the preface to the work, which is essential reading for the history of the *Antologia* and European culture, which Mazzini submitted to the magazine in 1828, to be published the following year under the startling, prophetic pseudonym "an Italian". It was entitled "D'una letteratura europea".

The book followed and carefully examined the passage from the essential cultural idea of 18th century Europe towards a view in which culture and politics meet, albeit with all the diplomatic caution and prudence of the founder-editor of *Antologia*.

The balance between Enlightenment and Romanticism is preserved in all the pages of the magazine. The magazine itself thrived in the romantic climate but did not forget the great values of mankind, pro-

gress, and the brotherhood of man which went along with the parable of the "Enciclopedia".

Europeanism means "that certain idea of Europe". It is no coincidence that this is the title chosen for the first part of the book, which is divided into 4 chapters: "Cultural Europeanism: from the Enlightenment to Romanticism"; "From 'Letteratura Europea' to 'Giovin Europa'"; "Viesseux, the European", and "The Europe of the ancients and the moderns". These are the titles of the anthology of works: *Italy and Europe*, *The protorisorgimento*, *The idea of European civilization*, *European literature*, *For a European legal system*, *For a European economy*, *For a European education*, *European society*, *The European arts*, *The emerging European nations*, *Europe through travelling*, *The Europe of the ancients and the moderns*.

The anthology comprises extracts by Niccolò Tommaseo, Pietro Colletta, Gino Capponi, Giuseppe Montani, Giuseppe Montanelli, Raffaello Lambruschini, Emanuele Repetti, Cosimo Ridolfi, Leopoldo Cicognara, Giuseppe Pecchio, and the unabridged version of Mazzini's essay, "D'una letteratura europea".

"Italy and Europe". This was the thread that linked a history for a century and a half — the history which leads us to *Antologia* and *Nuova Antologia*. This was the thread that ran through all the Florentine experiences that may be summarized in the name of Giovan Pietro Viesseux. This was the thread that remained intact between the first literary "Gabinetto Viesseux" founded in 1819 in Florence and the "Gabinetto Viesseux" in the years under Fascism in which it was under the leadership of a poet who was not even a card-carrying Fascist — one Eugenio Montale.

It is no coincidence that the last words of the preface are dedicated to Montale: "In this spirit, with this frame of mind, I dedicate this volume to the memory of Eugenio Montale, a 'citizen of Europe' as Giovan Pietro Viesseux was in his day".



MARZIANO BRIGNOLI

Savoie Bonnes Nouvelles LA STORIA DEL REGGIMENTO SAVOIA CAVALLERIA

1692-1975



M. Brignoli: "Savoie Bonnes Nouvelles. La storia del Reggimento Savoia Cavalleria (1692-1975)" ("Savoie Bonnes Nouvelles. A History of the 'Savoia' Cavalry Regiment (1692-1975)"), Mursia Publishers, Milan, 216 pages with b/w photos, 30,000 Lire.

Following the publication of Giorgio Pugliaro's fine volume "I Lancieri di Novara", an event which took place just a few years ago, the Mursia publishing house had added another regimental history to its prestigious "Uomini ed armi" collection: "Savoia Cavalleria", written by Marziano Brignoli, a wise and conscientious military historian who writes in an habitually restrained and concise manner and has a passion for things equestrian.

The author's long acquaintance with General Raffaele Cadorna, the fifty-second Commander of the "Savoia" — and the men to whose memory this book is dedicated — has allowed him to enrich the narrative with episodes closer to our own experience, as well as a good many little-known details which prove especially interesting. In addition, the ready cooperation of quite a few veterans of the Regiment, together with the assistance provided by the director of the National Cavalry Museum, have made it possible to complement the text with a large number of stirring photographs whose documentary value is beyond question.

"Savoia Cavalleria" was founded on July 23, 1692 by Vittorio Amedeo II. The new regiment — composed of nine companies with fifty men each and an equal number of horses — was placed under the command of Count Gian Michele de Rossi di Piosasco. It received its baptism of fire on October 4th of the following year at Mar-

saglia, where it provided valuable assistance in covering the withdrawal of the Duke's army to Moncalieri, an action during which it repeatedly, and with selfless vigor, charged the advanced positions of the French forces commanded by Catinat.

Thus began the nearly three-centuries long history of this magnificent unit, which through the years, in good times and bad, has always remained true to the spiritual values contained in a brief, but finely-sculpted paragraph which summarizes a venerable version of the cavalry's rules of engagement: "The cavalry defends itself by attacking and dies galloping towards victory". These spiritual values have been amply demonstrated and reaffirmed by the Italian Cavalry, which, despite periodic changes in uniform, weaponry and tactics, has maintained its own particular approach to life over a centuries-long span of time.

The conclusion of the War of the League of Augusta — a conflict which saw Piedmont regain Pinerolo from the French — was followed by the outbreak of the War of the Spanish Succession, an event which marked the beginning of a difficult but glorious period for the "Savoia Cavalleria"; glorious, because Vittorio Amedeo II almost always managed to preserve his cavalry's freedom of action. Even following the invasion of Piedmont, the Regiment continued to launch its valorous incursions. Always meeting the enemy with firm resolve, it did its best to slow his progress, inflicting continual losses through daring raids on his rear and flanks.

The episode which gave rise to the motto whose words still are below the coat-of-arms used by the "Savoia Cavalleria" took place in the course of this long war on September 7, 1706 at the Battle of Turin. As Brignoli writes: "The Savoia Cavalleria distinguished itself for its outstanding valor during the Battle of Turin, and on that day was born the motto 'Savoie, bonnes nouvelles'. Once the French counterattack at Madonna di Campagna had been repelled, a messenger was sent off to carry the news to Duke Vittorio Amedeo and Prince Eugenio, both of whom had been watching the battle from the vantage point of the Superga Hill. With the blood from a wound suffered moments earlier staining the white tie around his throat, the messenger cried out: 'Savoie, bonnes nouvelles!'. In honor of this horseman, the Duke adopted his cry as the Regiment's motto, declaring that from that point forward, the horsemen of the 'Savoia' would all wear red ties in memory of their heroic companion".

The narrative continues, ever precise and convincing, following the Regiment through the wars of the Austrian and the Polish successions, the campaigns against revolutionary France, the wars for national independence and the two world wars: right up through the present day and the 1975 reorganization plan which dictated the contraction of the glorious Regiment into a battalion. At this point, the author stops, for, as he writes: "What follows is no longer history, but something closer to a news

story, and news is an area where the historian hesitates to enter, preferring the perspective of time — an ever necessary factor which lends men and things their just importance — to the narration of the present, a form in which the sentiments and resentments of the moment often combine to distort one's judgement".

Among the many heroic episodes taken from the Regiment's past, special mention should go to the engagement at Isbusenskij, less because of the fact that it marked the last cavalry charge in military history, than because of the manner in which the "Savoia Cavalleria" acquitted itself on this watershed occasion, offering an emblematic glorification of the "esprit" which has always inspired the horsemen with the red ties: a "spirit" composed of ideals, traditions, solid moral discipline, a sense of duty and an unquestioning fidelity to the sworn oath.

In August of 1942, the "Savoia Cavalleria", which had arrived in Russia the preceding summer, was assigned to patrol the ample stretch of undefended territory between Jagodny and Tsebotareskij, two strongholds under the control of the 53rd and 54th Regiments of the "Umbria" Divisions.

On the morning of August 24th, two battalions of Siberian infantry, having deployed themselves in camouflaged positions in order to take the squared bivouac of the "Savoia" by surprise, opened fire. At first, their attack was met by the precise and violent fire of machine guns and anti-tank cannons; this was followed by the mounted action of the troops. Without a moment's hesitation, the 2nd troop — under the command of Colonel Alessandro Bettoni — courageously charged the flank and the rear of the enemy's forces. Meanwhile, the 4th troop, fighting on foot, attacked the enemy head on. This first attack, during which the horsemen used hand grenades and sabers, was followed by further charges on the part of the 3rd troop, fighting on horseback. Once both troops had run up and down the entire length of the Soviet formation, making use of their sabres all the way, the enemy forces were put out of action.

Conducted with great energy and admirable dispatch, the engagement cost the Russians 250 dead, 300 prisoners and a large number of heavy weapons. The tactical result was a lessening of the enemy pressure on the stronghold of Tsebotareskij as well as the total liberation of the Isbusenskij position; at the same time, the regiment continued to pose a threat to the flank and the rear of the enemy formation.

Considering the result achieved, the losses on the Italian side were not excessive: 32 dead, including 3 officers; 52 wounded, including 5 officers, and 100 horses out of action. "It seems only right that the horses also be remembered — writes Brignoli — because the relationship between cavalry soldiers and their horses goes beyond that between a man and his means of transportation; it is the bond be-



tween a man and his companion in arms, with the horse itself representing a weapon, indeed, the primary weapon, of the cavalry soldiers: not an inanimate metal tool, but a weapon made of blood and muscle, with its own deeply-rooted instincts and — why not? — its own generous spirit of self-sacrifice. Only those who come into regular contact with horses, and know the animals well, can truly appreciate and love all the traits of this noble beast, an invaluable assistant in the tranquil tasks of peacetime and a valiant warrior in times of conflict.

The narrative does not deal exclusively with heroic episodes. Technical matters are also given adequate treatment, and the book includes accurate research on weaponry, training and tactics, from the seventeenth-century "caracole" to the "charge" of Frederick the Great; indeed, all the way up to the mechanization of the present day.

The book also lists the citations for the decorations awarded to the regimental Standard, plus the names of all those who either fell in battle or received military decorations during the Second World War, as well as the names of the horses who took part in the Russian campaign between July 1941 and May 1943 and the names of the Regiment's commanding officers.

In short, the work is to be recommended not only as a piece of history, but also as a study of customs and tradition, given that the author has succeeded in placing the regiment's deeds within an historico-social framework which rounds off the narrative, making it unflinching exciting and alive.

Oreste Bovio

52^a Battaglione Fanteria d'Armata "Alpi"
1^a ESPOSIZIONE
Storica, Militare, Filatelica e di Cartoline d'Epoca



120^a ANNIVERSARIO DI BEZZECA
ATTIMIS

Miscellaneous authors: "1st historical, military, philatelic and post card exhibition", 52nd 'Alpi' Infantry Battalion, Attimis, 1986. Not for sale. 500 numbered copies published.

To commemorate the 120th anniversary of the Battle of Bezzecca (21st July 1866), an interesting Garibaldi exhibition was held at Attimis, designed and organized by the 52nd 'Alpi' Infantry Battalion — successor to the "Corpo dei Cacciatori delle Alpi" which, under the leadership of the Hero of Two Worlds, fought gloriously in the Risorgimento campaigns.

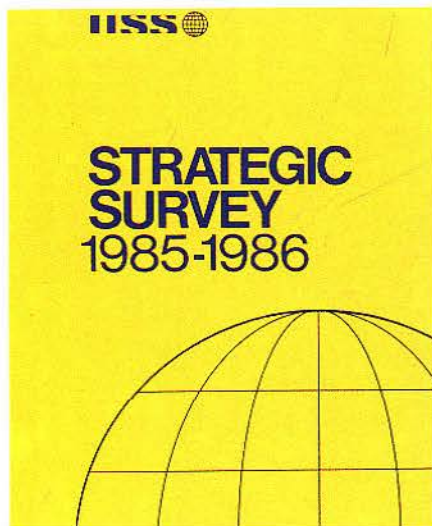
The idea was to recall a particularly exciting phase in the third war of independence, and some of Italy's leading collectors took part: Renato Artesi, Silvano Bonetti, Mauro Vaccari, Mario Capuano, Bruno Fontana, Giuseppe Marraffa, Enzo Montecchi, Attilio Snidero and Gian Carlo Torcelli with objects of exceptional historical interest.

A special edition of only 500 numbered copies was subsequently published, not for sale, with articles of interest for historians, stamp collectors and collectors in general, most of them written specially for the occasion.

The book contains some of the most important aspects of the culture of the Risorgimento, a legacy of a historical period that is not only for students learning about memorable heroic moments of history for the first time, but above all for anyone who is interested in finding out more about this stage in our history and the general background to it.

Recalling such an important period in our history in this way has certainly been a fortunate 'cultural moment', and has helped to strengthen the bonds that exist in Friuli between the military community and the civilian population.

Massimiliano Angelini



International Institute for Strategic Studies: "Strategic Survey 1985-1986", London 1986, 238 pages, £ 12.

"Strategic Survey" is the twin publication that complements the other well known annual IISS publication, "Military Balance",

and provides an overview of the developments of the world strategic situation, and for each geopolitical area it examines the main themes of relevance to the political and military authorities, and to experts and scholars of strategic problems. The book also provides a detailed chronological list of the main events of 1985, which it defines as a year of uncertainty and strategic wait-and-see as a result of the changes in the Soviet leadership and the technological instability in the arms sector.

Once again, the staff of the International Institute for Strategic Studies has not let its readers down, publishing an excellent and acute overview of the main strategic facts and problems. Obviously, it is impossible to mention all the subjects discussed, and so we will merely examine the points which the editors themselves focus on: international terrorism, the military use of space, improving conventional NATO defence, and the debate on theatre antimissile defence in Europe.

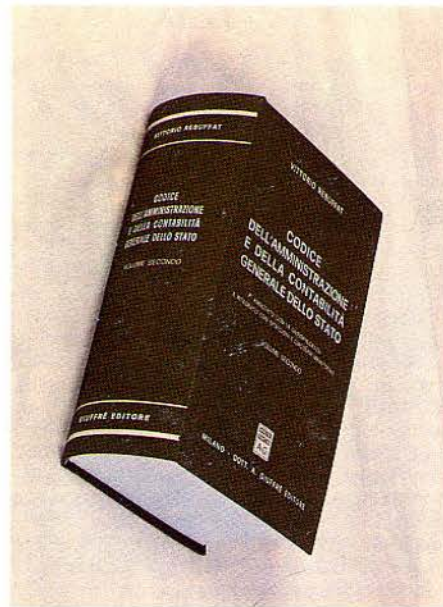
The problems of international terrorism are dealt with in an extremely cautious manner, leaving the options open. The authors emphasize the danger of technological terrorism (not only chemical and nuclear, but also terrorism using the very latest precision weapons, particularly portable ground-to-air missiles), and also the difficulties faced by the great powers in trying to combat it effectively. The military use of space is being stepped up all the time. Strategic telecommunications, surveillance and target acquisition systems and weapons guidance systems are coming to depend increasingly on space. Meanwhile, increasingly effective antisatellite weapons are being developed, at least as far as their effectiveness against low orbiting satellites (up to 1,000 kms) is concerned. Antimissile strategic defence weapon systems will also be deployed in space. Particular stress is placed on stepping up the conventional defence of Europe. The constraints relate to the declining birthrate, the limited defence budgets of the NATO countries, and the low level of integration of the western arms industries. Because of these limitations, it is highly unlikely that NATO's defences will be separated from the direct support of nuclear weapons, even though the new technologies are offering new solutions that were impossible in the past. A large amount of space is also devoted to the problem of theatre missiles, which are absolutely essential to Europe and NATO. Towards the middle of the Nineties, there will be a real threat of a Soviet missile attack using conventional warheads, which could destroy the West's air bases and forces in their peacetime locations. On the other "side of the hill", meanwhile, the fact that the Warsaw Pact has considerably stepped up its antimissile and anticruise capability could make the flexible response strategy impracticable, neutralizing the selective and limited nuclear strikes which it entails.

This clearly shows the challenge of an enhanced strategic and technological in-



stability, which might considerably alter the present balances and the conditions of European and world security. Stability can only stem from a new round of arms limitation negotiations between the two super-powers, not only in relation to nuclear and strategic weapons, but also conventional and chemical weapons.

Carlo Bess



Vittorio Rebuffat: "Code of the Administration and General Accounting of the State", Giuffrè, Milan, 1986, Volume I

pp. XLVIII + 2,328, 65,000 Lire:
Volume II pp. LII + 3,086, 150,000 Lire.

Anyone who has to venture into the maze of general government administration and accounting for research or for professional purposes often loses the thread of Ariadne and gets lost in the vast, fragmentary jungle of rules and regulations.

To help the people who, day by day, run the risk of getting lost in the incredible tangle of legislative provisions and regulations, Giuffrè has published the second volume of "Code of the Administration and General Accounting of the State", Giuffrè, Milan, updated to 1st September 1986 by Vittorio Rebuffat, head of the financial inspectorate of the General Accounting Office. These two volumes — the first of which was published by the same author in 1982 for Giuffrè — stand out on account of their particular features: they are highly polished works and the fruit of punctilious research, and they offer a complete account of the sources of laws and regulations, all carefully coordinated.

This task was made difficult by the increasing confusion in the legislation in this field.

The second volume is both an update of the first, and a complement to it.

It comprises 42 sections, each containing provisions that are coordinated and accompanied by cross-references to the many provisions of case-law and judicial precedents.

It also contains the full texts of all the financial legislation ever enacted, with copious details of the judgments of the ad-

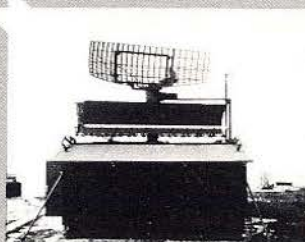
ministrative tribunals, on the work and structure of the 'State Council', the regional administrative tribunals, the Court of Audit, and the State Attorney's Office. The accounting of the military administration, which is number forty one, contains the new "Administrative Regulations of the Guardia di Finanza" — Presidential Decree no. 189 of 10th March 1986, which can be used for a comparative analysis with the "Regulations for the Administration of the Accounts of the Army, Navy and Air Force" — Presidential Decree no. 1076 of 5th June 1986, to get a clearer idea of the organic structure, the equivalent and different legal aspects, and the new laws and provisions that have developed.

In over 3,000 pages, the book contains about 400 laws, 100 circulars and 4,000 *obiter dicta*, and thanks to the selection and listing of sources, the reader can immediately find the legal provisions on any subject. There are three indices (by subject matter, chronological, and general analytical/alphabetical) which make the work easy to handle. It is a valuable aid to anyone working with the law, civil servants, researchers and anyone else having dealings with the civil service, who can rapidly find out anything they need regarding government administration, financial management and accounting.

In conclusion, it is a unique tool for study and work, because it manages to reconcile, at the highest level, scientific rigour, concrete utility and easy consultation as a result of the way the author has wisely and carefully selected this huge collection of documents.

Raffaele Pugliese

40 YEARS EXPERIENCE



SMA is a flexible company founded in 1943. Since 1948 has been active in design, development and production of electronic equipment for defence. Main activities are radars for ground, airborne, missile applications and related display systems. The company broad spectrum permits the supply of turnkey systems tailored to the end-user needs.



SMA

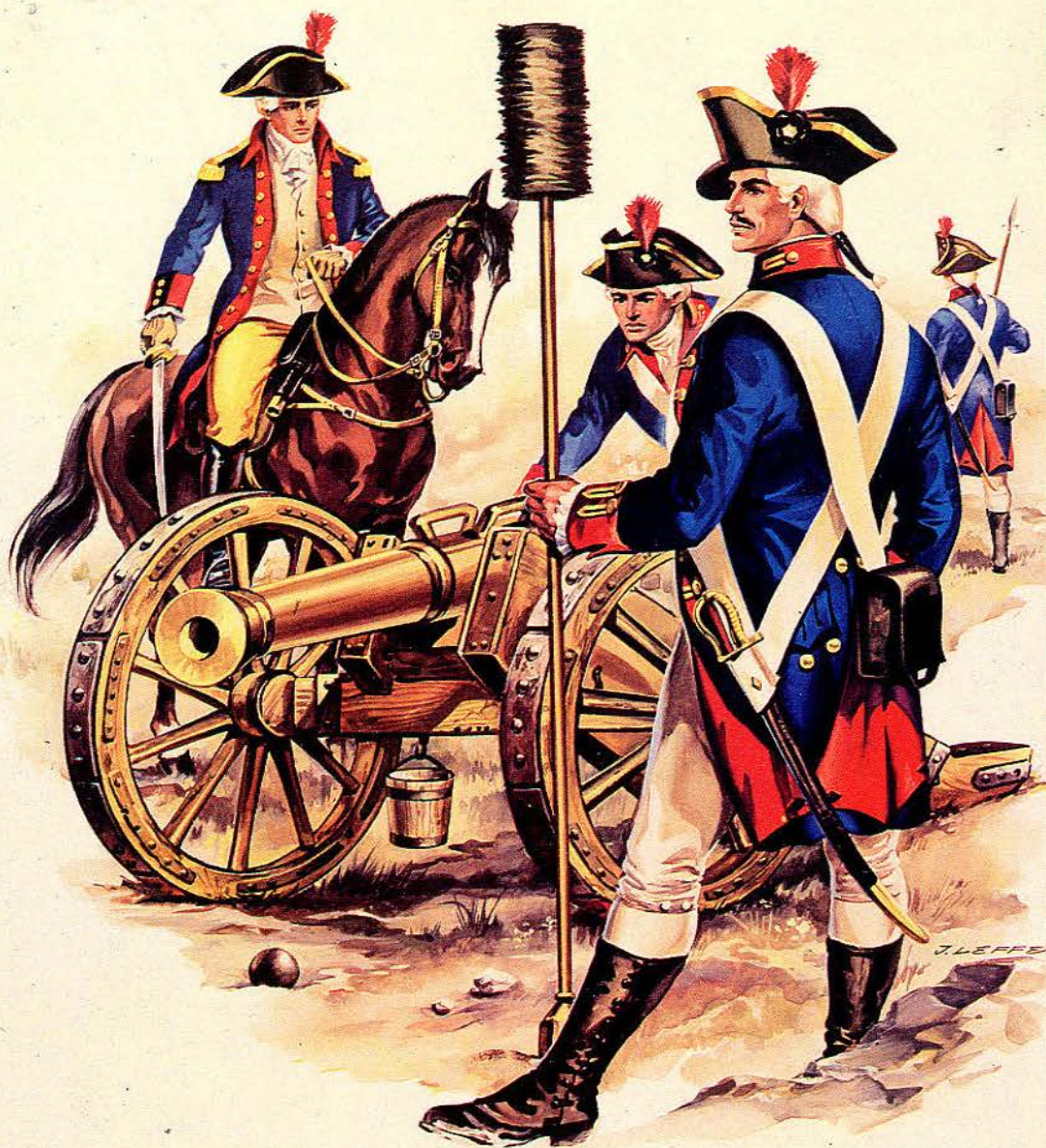
SEGNALAMENTO MARITTIMO ED AEREO

SMA's basic product lines and business sectors include: High definition and discrimination coastal radar control stations, both for maritime traffic management systems and military application (anti intrusion, coastal defence, mine splash detection); Shipborne navigation /search radars devoted to low, very-low air coverage (anti sea skimmers); Missile active homing heads, provided with a variety of ECM devices, for SSM (OTOMAT MK2) and ASM (Marte MK2) applications; 360° coverage search and navigation airborne radars for helicopters and maritime

patrol aircraft; Standard Pod contained search radars for fixed wing aircraft to be employed in conjunction with ASM; Integrated search and tracking radars for A/A defence to be employed both on specialized trucks (OTOMATIC) or on semi-mobile/fix station for point defence; applied research aimed toward millimetric waves (up to 100 GHz) in active and passive sensors (radiometer); Duct analysis and electromagnetic propagation forecast.



PER
LA CULTURA
LE TRADIZIONI
E L'IMMAGINE
DELL'ESERCITO



Continental Artillery
1777-1781